

# HP Professional

THE MAGAZINE FOR HEWLETT-PACKARD ENTERPRISE COMPUTING ▲ VOL. 7 NO. 1

JANUARY 1993

## COMMERCIAL UNIX

**What System  
Administrators Need  
To Know To Make  
A UNIX Network Go**

**1993's MAIN EVENT**  
**The Great Operating  
System Showdown**

**INDUSTRY WATCH**  
**HP, Convex Merge  
Workstations And  
Supercomputers**

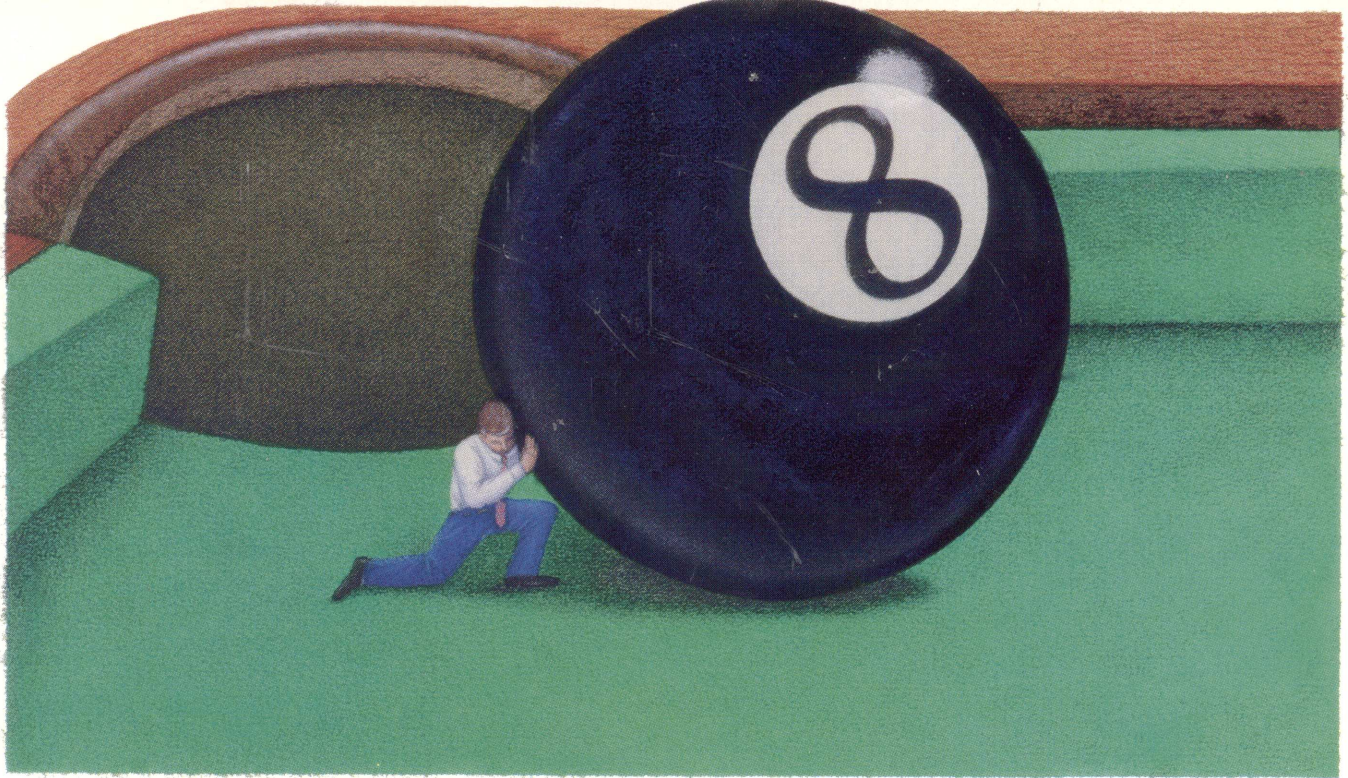
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**HP's Interface  
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**Z-Code Delivers  
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Open Systems Alternatives





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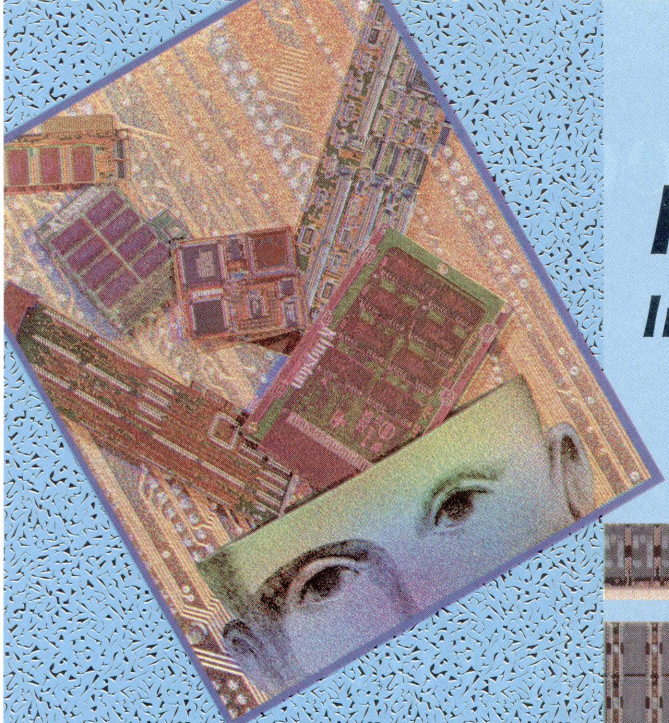
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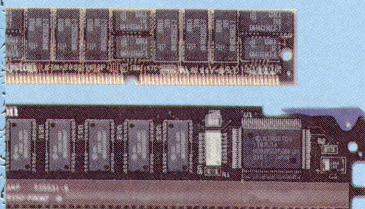
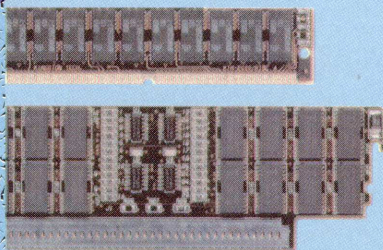
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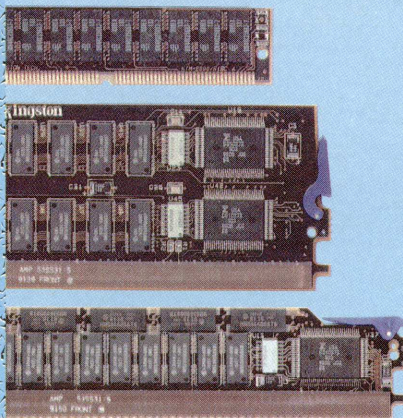
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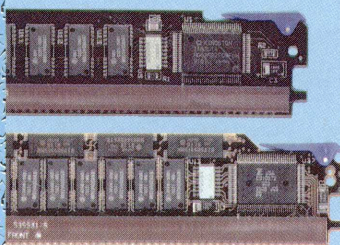
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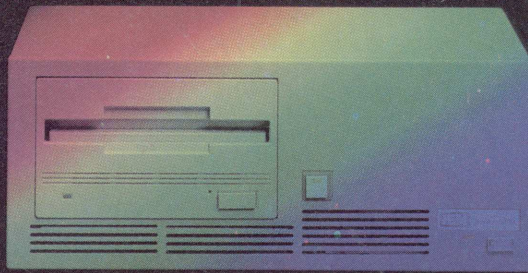
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## 22 PERSONNEL FREEDOM

By Paula Jacobs

Open systems and flexible client-server environments offer significant advantages — and choices — for users of human resources and payroll software. The corporate mainframe's exit interview has opened new opportunities for decentralized UNIX applications, which can adapt more easily to a rapidly changing global workplace.

## 30 THE GREAT OPERATING SYSTEM SHOWDOWN

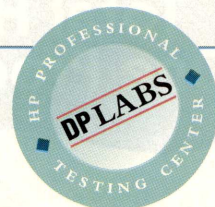
By Gordon McLachlan

This year the Open Software Foundation's OSF/1 and Microsoft's Windows NT will challenge UNIX' once-exclusive claims to portability, interoperability and standards. Meanwhile, HP is sticking to its guns with HP-UX. Will the company's open operating system strategy pay off or misfire? Only users can decide.

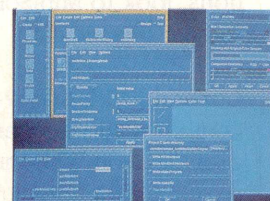
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By Marty Poniatowski

Although HP's Instant Ignition program makes it easy to get your HP-UX system up and running, there's still much that system administrators need to know to make their UNIX networks go. Fortunately, HP's System Administration Manager (SAM) can guide you through basic network set up and configuration.



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CIRCLE 112 ON READER CARD



# Freedom (Not) To Choose



By Don Marks



the industry's first "open proprietary" system and embarked on a quixotic quest to convince analysts that such an animal could indeed exist. In time, most agreed with Sevcik that for a "proprietary" system the HP 3000 was surprisingly "open," but nearly all questioned the merits of buying a factitious open architecture. If users wanted standards-compliance and interoperability, why not buy HP-UX?

This isn't meant to suggest that HP 3000 users didn't benefit from HP's open systems Perestroika — they did. The question HP is now asking itself is: Did the 3000 benefit from a marketing strategy designed to highlight newly added features and hide perceived proprietary weaknesses? The answer, according to Glenn Osaka, the Commercial Systems Division's new general manager, is no.

In fact, Osaka now believes HP unintentionally undermined the HP 3000 by failing to publicize its traditional strengths. First among these, he says, is the system's wide range of third-party applications. And from now on, potential customers should expect HP to stress the solutions ISVs and VARs provide for the 3000 as opposed to the system's remarkable openness or superlative performance on benchmark tests.

## Those Who Choose Not To Choose

HP's new strategy for the 3000 involves a divide and conquer approach to the midrange market. According to Pat Adamiak, product line manager for the HP 3000, the company now recognizes two broad categories of customers. For one, open systems is just what the doctor ordered — a sword of Damocles to dangle over vendors' heads, pushing hardware prices down and driving performance numbers up. Freedom of choice is indispensable for these folks, and they don't mind working with multiple suppliers. They flock to HP-UX in droves and remain the fastest growing segment of HP's installed base.

But, says Adamiak, HP has also identified another market

segment that doesn't consider freedom of choice the ultimate advantage. Included in this group are small businesses — long-enamored with the HP 3000's ease of use — as well as large organizations disenchanted by the complexity of open systems.

Yes, believe it or not, HP now acknowledges that not everyone relishes the prospect of maintaining multiple vendor relationships, sorting out arcane networking standards and integrating a mixed bag of systems and servers into an elaborate, tough-to-manage client-server LAN. To the company's sincere surprise, some customers prefer the freedom to concentrate on their core business practices.

Taken at face value, HP's new approach makes terrific sense. When you scratch the surface, however, several troubling contradictions appear. Perhaps the most disconcerting of these is the potential for sending yet another mixed message to the industry. In marketing the HP 9000, HP must continue to emphasize its commitment to open systems. And soon, it must deliver truly low-cost UNIX boxes to compete not only with Sun SPARC and IBM's RS/6000 but also with commodity-priced PC servers running Windows NT, OS/2 or NetWare.

Yet to market the HP 3000 effectively, HP must simultaneously highlight the burden these open systems platforms place on customers. The question then becomes: Can a company that has spent the last several years beating the drum for UNIX and industry standards really afford to suggest that the open systems emperor has no clothes?

## Nonetheless, The Choice Is Yours

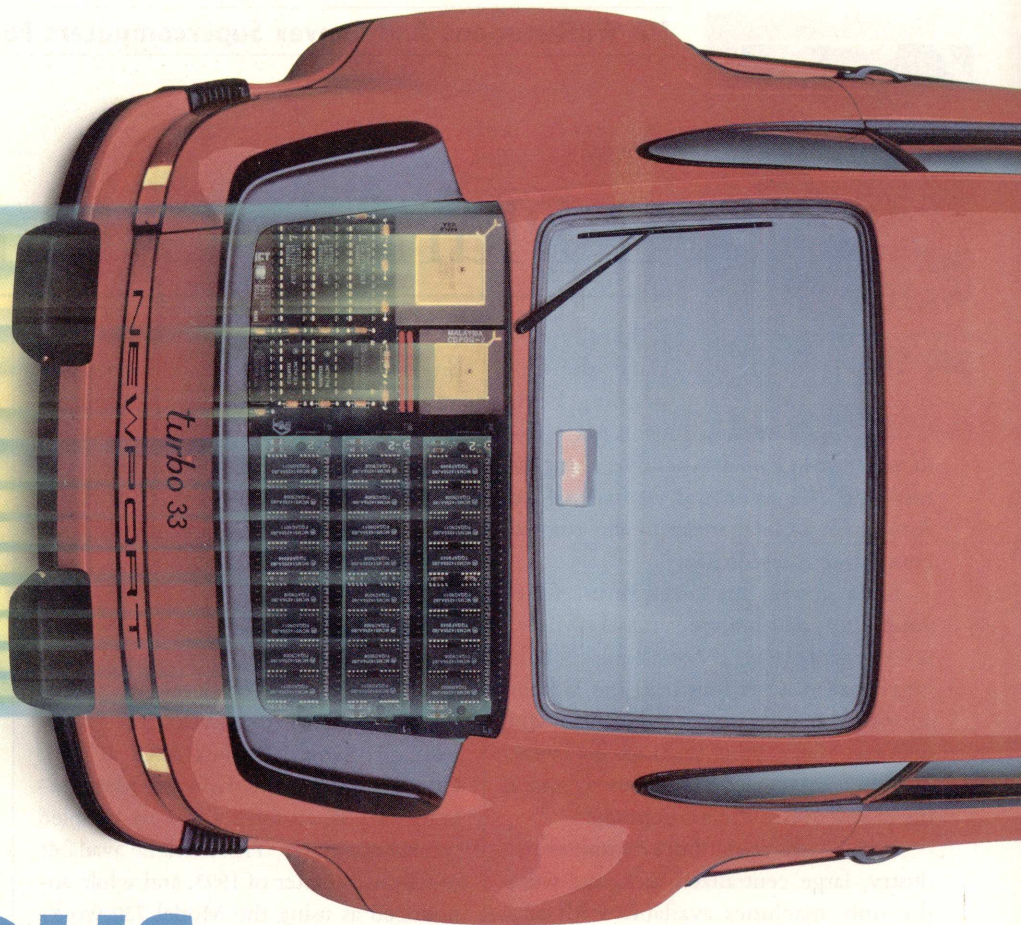
At the INTEREX Conference last August, HP announced it would deliver an SQL interface for TurboIMAGE. In December, the company announced it would bundle the new interface with TurboIMAGE at no extra charge (for new customers) and rename the database IMAGE/SQL.

At present, however, HP hasn't decided how to handle distribution of the SQL interface to existing IMAGE users and is conducting a survey to collect user feedback. One option under consideration is to distribute the interface to all users and raise MPE system support fees to cover the company's costs. The other is to release HP SQL for IMAGE as a separate product for interested users. The choice is yours.

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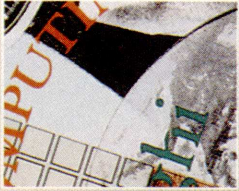
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**CIRCLE 246 ON READER CARD**





## INDUSTRY WATCH

Bill Sharp

redundant arrays of inexpensive computers) and the eventual demise of an American societal malaise: the rugged computing individualist.

Let's cover the latter point first. Americans, and individualists elsewhere, tend to view themselves as tough, hard-bitten loners who thrive in the face of adversity, ride their horses through wild country, make their fortunes in Texas, use chewin' tobacco, and never, and I mean *never* share their computers.

In the early years of the computer industry, large centralized monsters were the only machines available with any power, so naturally they sold very well. But the minute they were given the chance to move from mainframes to minis and workstations, cowboys and cowgals started to make the switch at full gallop, and soon gave rise to a downsizing stampede.

But placing one or more processors on every desk wastes a lot of computing resources — so these days computing-policy wonks figure on hauling back the reigns on the newest stampeding paradigm. Rather than downsizing wildly into oblivion, some would have us consider an alternative scheme, analogous to the popular RAID disk array concept. RAID relies on relatively inexpensive disk drives with a dedicated controller to ride herd on communication, resulting in a powerful, cost-effective memory system comprised of somewhat modest components.

The same is happening to computers themselves initiating a new concept, computing clusters. HP will work with partner Convex Computer Corp. (Richardson, TX), to make them. These

I, hereby declare, the impending birth of RAIC (re-

scalable, parallel systems use PA-RISC processors controlled by and working in tandem with Convex supercomputing hardware and software. The announcement of these systems follows just seven months after the two firms formed a business and technology relationship.

### Parallel Lines

HP/Convex systems will take two primary forms:

■ **HP/Convex cluster:** Series 700 workstations linked by Convex cluster software products, Convex XXX (PVM), Convex NQS+ and Convex Math Library (MLIB) to form a loosely coupled parallel computer. These will be available in the first quarter of 1993, and while announced as using the Model 730 workstation, they also will make use of the much zippier new Model 735. Prices will range from \$70,000 for an Ethernet-based, two-CPU cluster to more than \$400,000 for an FDDI-based eight-CPU cluster with Convex or third-party software.

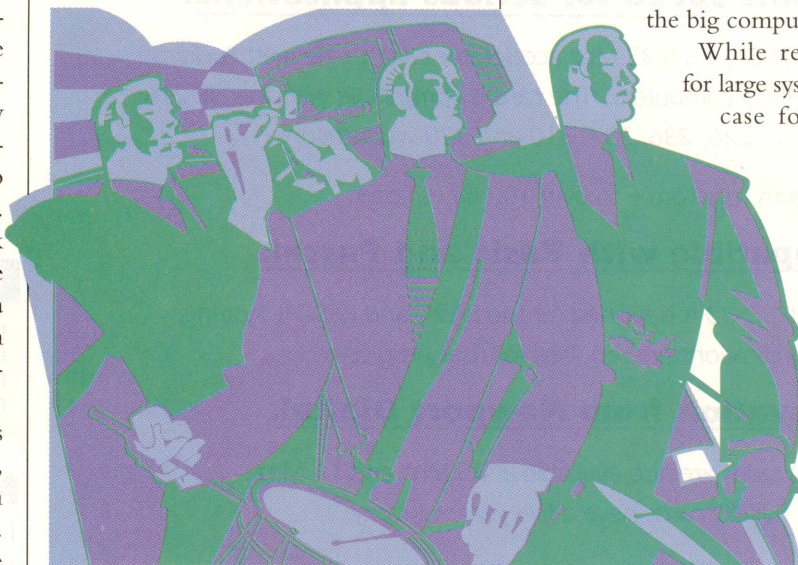
■ **Meta Series computer:** A Convex C Se-

ries supercomputer tightly integrated with Series 700 workstations to deliver very high performance levels. This solution is best for customers who need both strong vector and parallel processing from the supercomputer, as well as scalar processing from the workstations. This solution also provides an upgrade pathway to Convex PA-RISC-based massively parallel processing (MPP) systems promised for 1994. Meta systems also are scheduled for first quarter 1993 availability. These will start at \$500,000 for a Convex C3410 Supercomputer, two-node PA-RISC-based cluster, disk, tape and Convex cluster software.

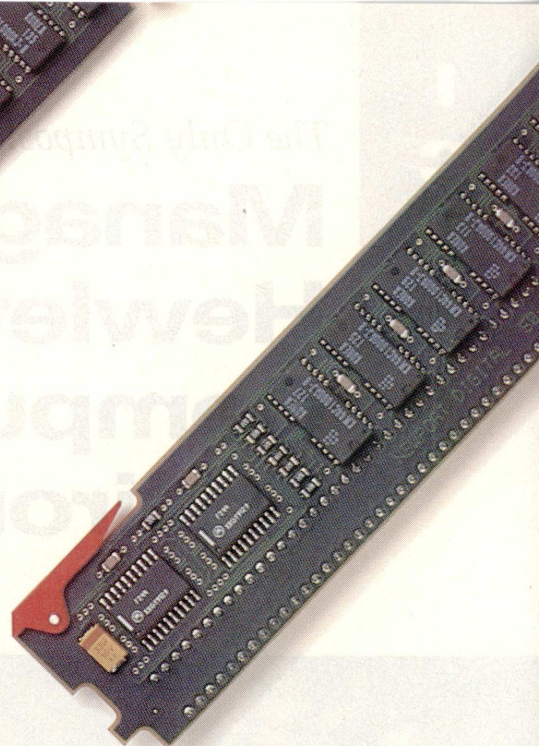
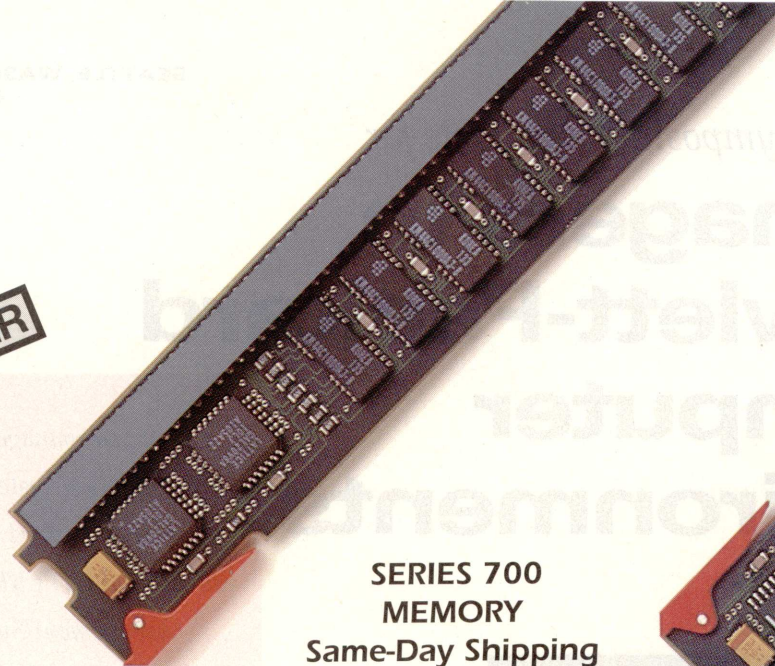
Clearly, while powerful, these cluster systems aren't cheap. So, you ask, why go to all the bother and cost of putting them together?

The European Organization for Nuclear Research (CERN), Geneva, Switzerland, offers a compelling answer. CERN created its own computing cluster of Series 700 workstations, which delivers more than twice the processing power of its old IBM 3090/600J mainframe for one-tenth the cost of the big computer.

While reducing costs for large systems is a good case for looking at clusters, just







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as important is improving computing flexibility and extending the life of existing systems. Both of these points were made by Jim Balthazar, vice president of marketing for Convex, at the HP/Convex announcement.

Computing systems composed of both supercomputers and workstations can be tailored to match the mix of large and small jobs faced by a company, says Balthazar. "I have my large simulations and my small simulations, and I can get both done on machines that are efficient for the job," he says. "If I add more HP systems, I can increase the number of small jobs and keep the Convex supercomputer available for large jobs."

### Share The MIPS

Another important function for these systems is extending computing capability to existing workstations on a network. "There are tremendous numbers of workstations out there," says Balthazar. "Companies cannot afford to turn all of them over with each new hardware announcement, and most users don't need maximum performance all the time. If I buy a cluster of high-performance systems, I can make their capability available to users on the network when they need it. Users can have virtual workstations with the latest performance capability without the cost of upgrading."

While nobody is making a big deal out of it yet, there are other possibilities for this cluster concept. Several years ago, HP's Fort Collins facility, home of HP's cluster lab for customer evaluations, demonstrated an interesting offshoot of this idea. Research there tied together a network of workstations so whenever a workstation's owner was not making use of his system, it was available to perform computations for other people who needed the computing capacity.

Loosely connected clusters, such as the research system that Convex used to prove the HP/Convex concept, can make mainframe-capacity systems out of workstations located some distance apart around one or more buildings. Faster

FDDI systems such as that announced by HP in November make such virtual mainframes more feasible. The computing capacity of most companies lies wasted around the facility for long periods of time, probably most of the time.

Once some kind of reasonable accommodation allows security — and rugged individualists lower their geopolitical barriers — cluster technology seems up to the task of maximizing of our scattered performance potential. ■



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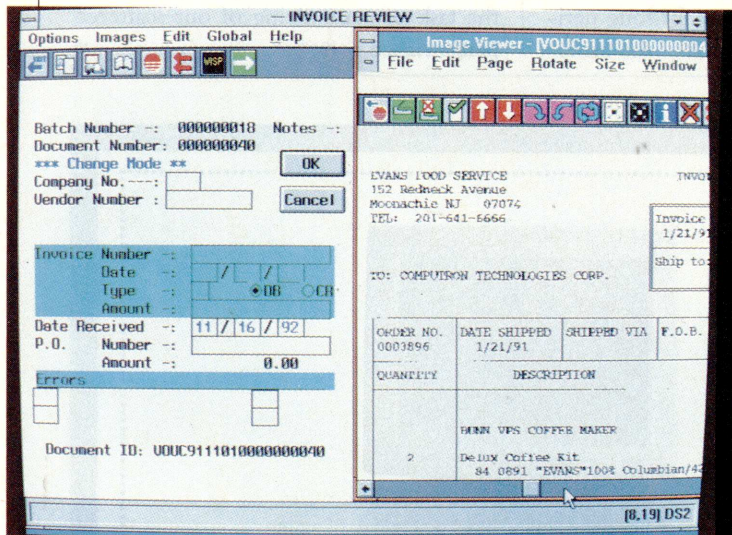
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## Accelerate Your Check Run



### Computron's N-Dimensions Financial Application Integrates Workflow Software To Streamline Accounts Payable Procedures

Inefficient accounts payable departments add up not only to angry suppliers but also to a great deal of lost money in the form of missed prompt-payment discounts. This is why it's worth paying attention to Computron Technologies Corp.

Computron has a set of financial software products, called N-Dimensions, which includes general ledger, accounts payable, accounts receivable, fixed asset management, purchase order/inventory, time and expense accounting management and report and query tools. What makes Computron truly interesting, however, is its addition of a home-grown workflow component, called EPIC, to its multilingual, multicurrency financial software.

Computron claims that EPIC, which automates the routing, scheduling, monitoring and supervision of work through a department or an enterprise, provides im-

mediate productivity gains to accounts payable departments.

How? When you add workflow management software, says Jay Ballantine, vice president of North American operations, departments rethink their processes. Rather than have clerks in one building paper clip invoices together and send them to another building where another clerk removes the paper clip and staples the papers together ("This is no joke," says Ballantine), workflow software helps people modernize their antiquated business processes.

Most invoices are routine and can be processed immediately no matter what technology you use. IDC/Avante principal and imaging guru Scott C. McCready says, "The trouble is, the work is going to people who are all equally qualified—or unqualified. People can't go through all of that documentation looking for quirks and deciding who [the problem invoices] should go to.... So if you're an operator and you get a difficult issue, what do you do? You put it on the bottom of the pile."

Instead, says McCready, "Put workflow software on a desk, and it immediately lets you be more selective about who gets what." Thus, the appropriate people do the appropriate work, expediting it more efficiently, which potentially can save you hundreds of thousands of dollars in missed quick payment discounts alone.

Computron's EPIC workflow component helps make this happen because it allows immediate indexing and verification of purchase order numbers and other identifying information. It then routes transactions automatically based on the information it identifies. The result, says Ballantine: Some companies, such as Santa Ana, CA, HP dealer Ingram Micro, have doubled the number of transactions they complete per day.

Typically, says Computron spokesperson Adam Thier, a customer intent on downsizing can reduce the size of its accounts payable work force by 10 to 30 percent. But competitive advantage, not downsizing, is the real reason companies are interested in EPIC and other kinds of workflow applications, Ballantine says: "They want a qualitative change in something like customer service.... One of the things [CIOs] say is 'We want to measure the cost of transactions and make sure that qualitatively those transactions are happening in the best way possible, because that gives us a true differentiator.'" — Elaine Appleton, Contributor

#### Computron Technologies Corp.

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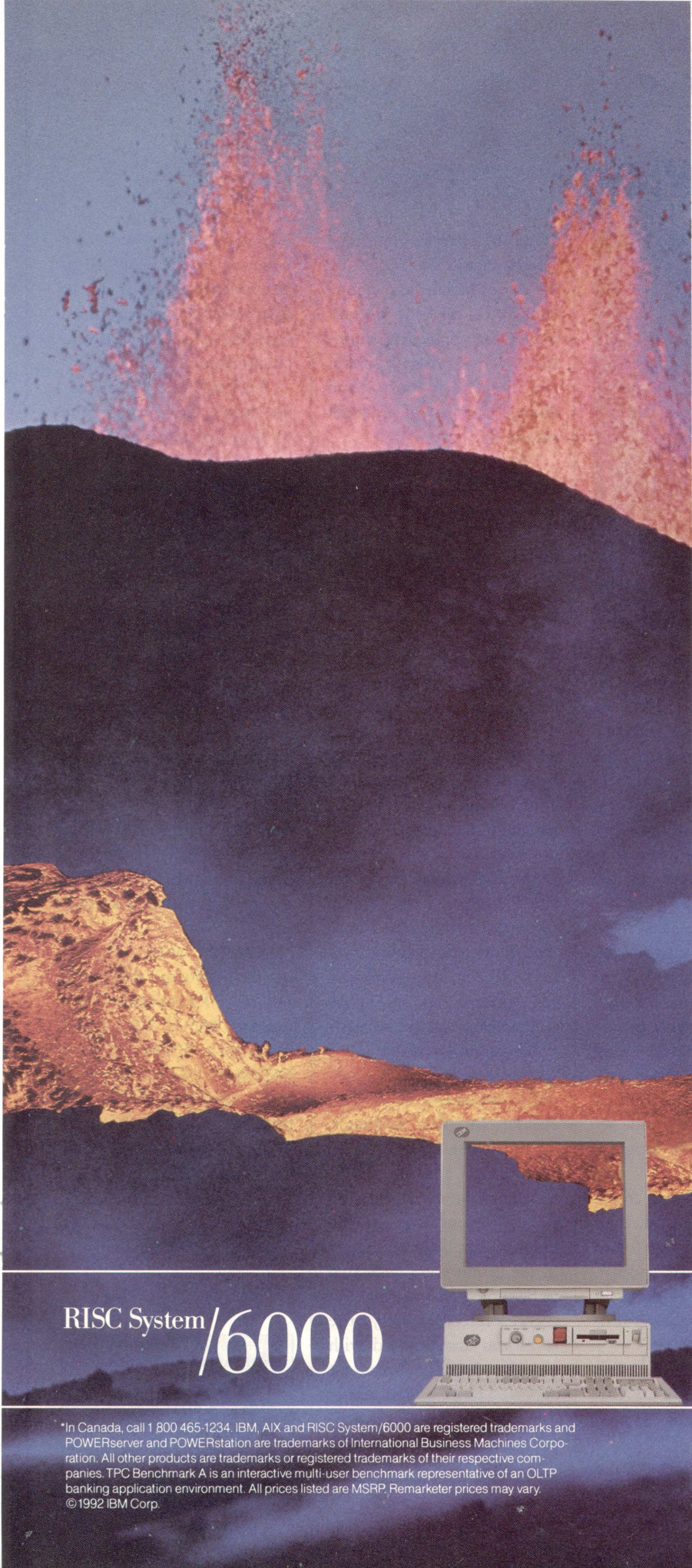
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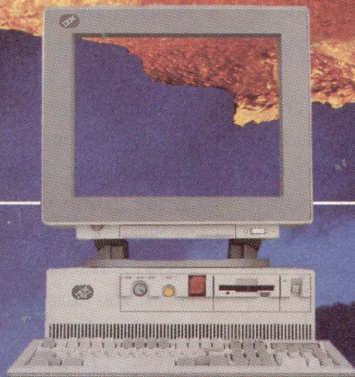
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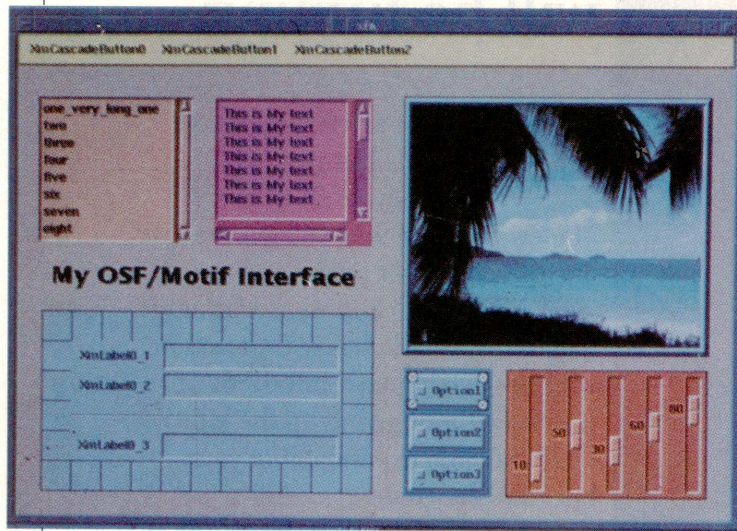
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# Re-Inventing The Widget



Looking For A  
Versatile GUI  
Builder? Non  
Standard Logics  
Unmasks  
XFaceMaker 2.0

Non Standard Logics (NSL) recently unveiled version 2.0 of XFaceMaker (XFM), its X/Motif application interface management system. NSL gave XFaceMaker a complete makeover, adding several new features, including a widget builder and the ability to create prototypes and templates.

XFM's WidgetMaker lets designers build customized widgets for Motif and Open Look. The integrated design of XFM 2.0 lets you prototype interfaces before using them. A resource editor, a C-like scripting language (FACE), and a test mode allow you to test the interface as you build it.

XFM 2.0 lets you create widget classes, as well as groups of classes, not found in the OSF/Motif toolkit. You save these widgets in templates as reusable modular intelligent objects.

Other XFM 2.0 features include the ability to edit menus through a dialog box,

print the interface and the widget tree in PostScript, use FACE to declare and define functions, provide default values for application functions, move widgets within the interface hierarchy and change the class of a widget on the fly.

The dialog boxes let you select, cut, copy and paste resources to build interface objects such as forms and menus. Dialog boxes can be simple for text-based operations, such as Boolean searches, to complex for applications requiring special fonts, bitmaps or translations.

Currently, XFM is used to develop applications in high-energy physics, aerospace, biotechnology, industrial controls and banking and financial industries.

Frans Kes is the manager of the flight dynamics group for Telesat Canada, which owns and controls the Canadian Domestic Satellite system. The group generates the software that maneuvers and controls six orbiting geosynchronous satellites.

Kes says his group originally evaluated HP's GUI builder, Interface Architect, for more than six months. In that time, a team of 12 Telesat designers worked on development of several graphical applications. Three of the group were dedicated to designing and writing user interfaces. Ultimately, the team was disappointed with Interface Architect because it appeared to be geared strictly for people experienced in C programming. In the end,

Kes says, "Since we were planning [to develop] 30 to 50 applications, each with its own interface, we concluded that the program was too cumbersome for our needs."

TeleSat's strict test schedule didn't allow much time to shop for alternative systems. As Kes explains, "We saw an ad for XFM and decided to give it a thorough test." TeleSat discovered that although XFM's language was limited compared to Interface Architect's, it was easier to use, and could handle all the company's requirements.

Once developed, interfaces built with XFaceMaker can be used in interpreted mode or saved either in U.I.L. or C code. XFM 2.0 automatically creates message files for the interface that conform to X/Open international standards. Users define colors with a standard color palette.

XFM 2.0 runs on most UNIX platforms including HP-UX. XFaceMaker requires 8 MB of CPU RAM including UNIX, X and OSF/Motif; 15 to 20 MB swap space, 10 MB of disk, 3 MB of RAM on an X server, X Window system X11R4 and OSF/Motif version 1.1. XFM 2.0 starts at \$4,995 for a single user license. — *Charlie Simpson, Technical Editor*

## Non Standard Logic

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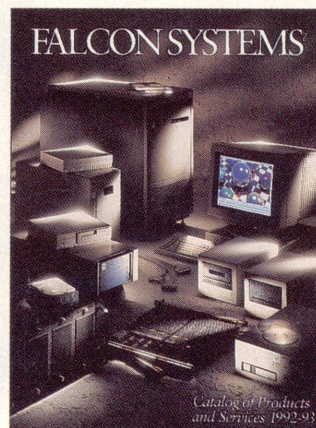
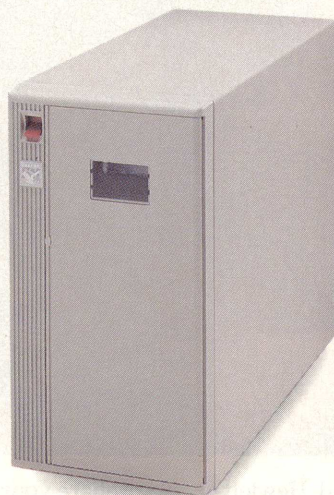
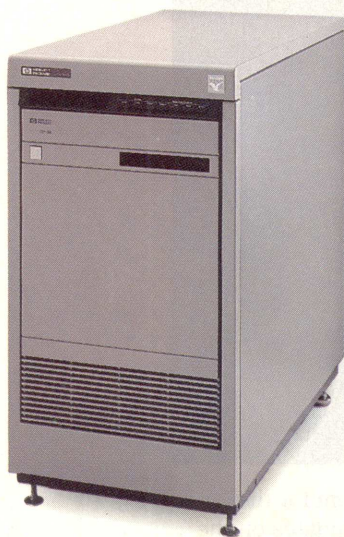
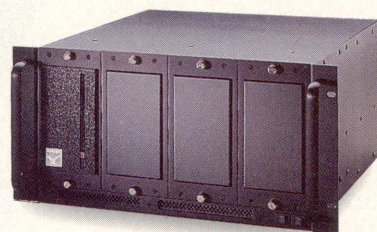
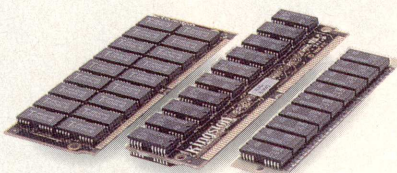
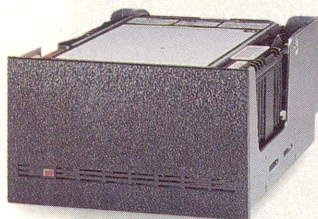
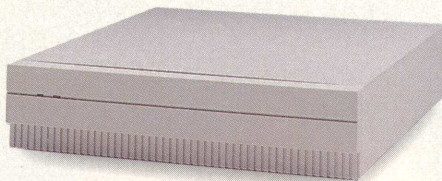
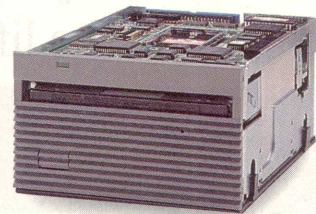
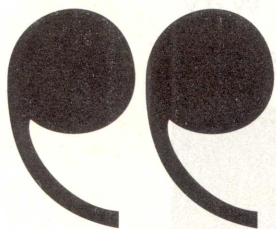
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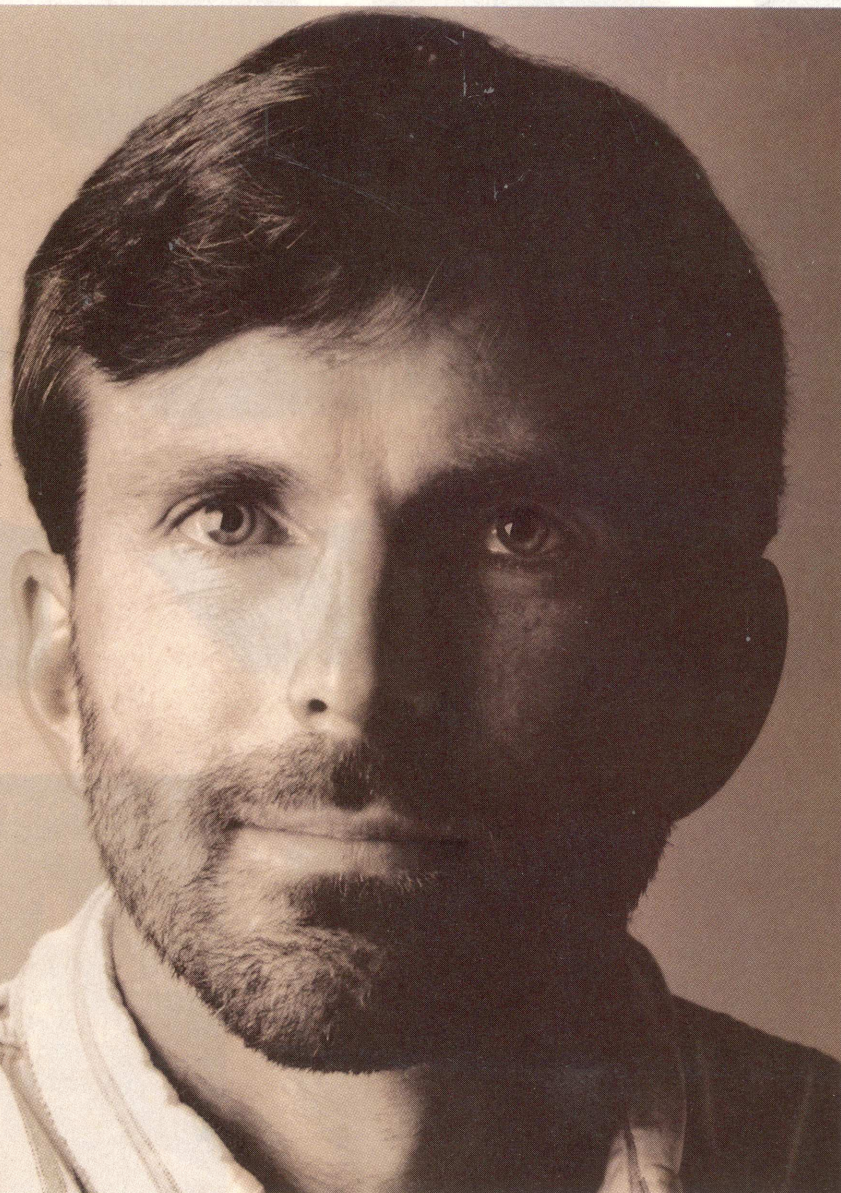
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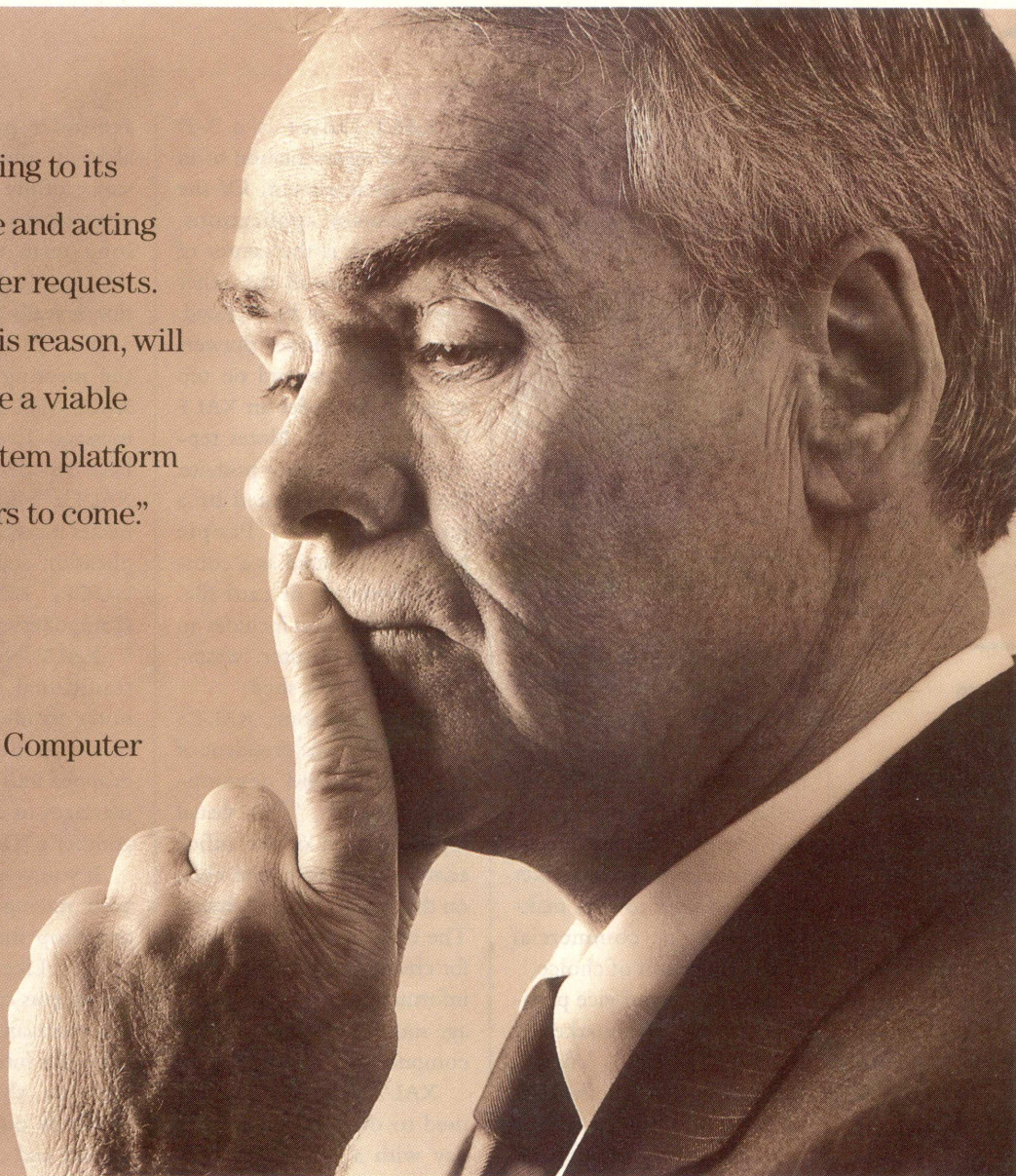
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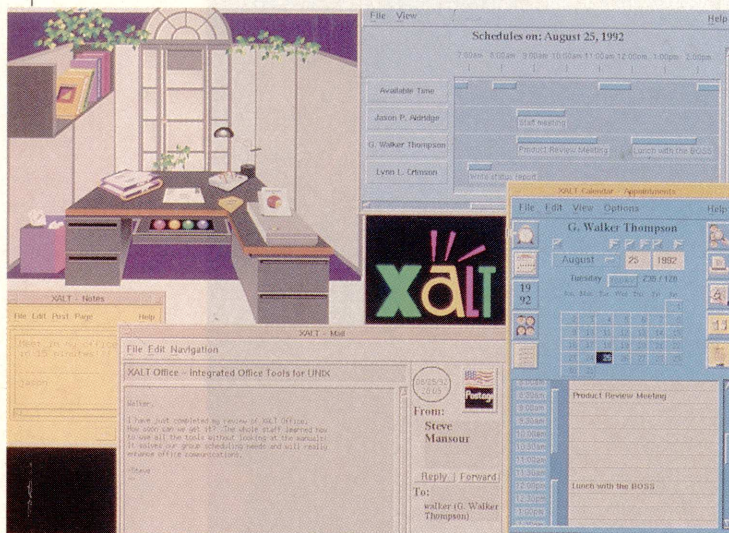
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## You Call This Work?



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At UNIX Expo last fall, attendees noticed a significant number of vendors who have taken the basic concepts of traditional PC applications and developed similar packages for UNIX. Industry analysts estimate that the market is gearing itself toward making UNIX the commercial desktop solution of choice.

Claudia Ferrini vice president of sales and marketing for XALT Software (Alamo, CA) agrees. XALT Software is one company that has created a UNIX productivity tool typically available for PC users. Its product, XALT Office, comprises five integrated applications for managing information and communication for UNIX users.

"Our goal is to bring PC strategy to the UNIX environment and make UNIX the owner of the desktop. We've been able to create an easy and intuitive package for users with any level of UNIX expertise," says Ferrini.

XALT Office is a 3-D graphical representation of an office environment. Of the five primary applications, XALT Desk is the center of activity where all the other applications can be accessed. The Desk includes drawers with file folders and on top of the desk resides an XALT Calendar, XALT Notes represented by yellow post-its, XALT Mail designated by a letter, and XALT People Manager depicted as a company directory or card file. XALT Office also includes an in/out box, printer, wastebasket and book shelf.

Steve Mansour, XALT's founder and vice president of engineering and development explains, "The visual representation of the office enables you to see and click on the application you desire. The drag and drop approach for creating and manipulating information makes the package more personable and less computerish."

XALT Calendar can be used to organize your work day with a to-do list or to schedule meetings. To invite co-workers to a meeting, you can drag them out of the People Manager card file and drop them into the Calendar application and proceed in scheduling a meeting based on their schedules.

Up to four reminders, audio and/or visual, can be programmed for scheduled meetings or appointments.

Rick Heaton, system administrator at Synaptics, uses the reminder function for a different purpose. "I have a

reminder programmed to alert me one month in advance of my software's one-year expiration date. For long-term reminders like this, the [calendar] application is really useful."

You can drag and drop the meeting attendees into XALT Mail and send them a message. Even if you don't have experience with E-mail, XALT's "postcard" approach makes it easy. The E-mail application supports Internet, UUCP, MCI Mail and CompuServe.

XALT Notes transforms traditional yellow post-it notes to electronic memos that can be dragged and dropped into file folders, mail messages or sent urgently to another's "Desk."

If you want to spell check your message or note, drag and drop them on the dictionary. Likewise, text-based documents can be pitched in the trashcan, filed in a file folder for future reference, or sent to the printer for hardcopy output. This integration and connectivity between applications is the product's attraction.

XALT Office is scheduled to ship this quarter and will run on HP 9000 Series 700. Price for all five applications is \$199. — *Andrea Zavod, Associate Editor*

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## A Nice Little Niche

### Tryonics' Remanufactured HP And Apollo Systems Fill A Market Gap With Quality



**"We help to support the Domain installed base and extend the life of existing equipment and networks by providing equipment and expertise that even HP may not have."**

Senior Technical Consultant,  
Tom Bennett

We are inside a 20,000-square-foot building, surrounded by computers. I see tens of DN10000s and hundreds of Apollo workstations. There are DN5500s, DN4500s, DN3500s, DN2500s, a few DN3000s and PCs, followed by hordes of monitors and lots of HP Series 400 and 700 workstations. This is not HP, nor is it a CIA secret facility. In fact, none of these hundreds of systems are turned on. They are in storage; they are waiting.

Though not for long, because this is the warehouse at Tryonics, Inc. (Portsmouth, NH), a reseller of "mature" and current Apollo and HP products. Tryonics is the creation of Steve Bartlett, president, and Rick Muse, vice president, who saw an opportunity in the lack of quality available from other after-market resellers.

"We're filling a gap in the HP Apollo market," says Tom Bennett, senior technical consultant and marketer. "We help to support the Domain installed base and extend the life of existing equipment and networks by providing equipment and expertise that even HP may not have."

This is no idle boast. Most of these products have been discontinued by HP. But

many users do not need to have the latest, greatest, fastest or the mostest on their desk. What they need is a system that is compatible with their other systems and serviceable by the same people. If the office is dominated by Domain, and the systems have all the power needed, why make a costly switch to HP-UX because a few extra seats are required? Why not buy remanufactured Apollo systems instead?

"We have a CAD shop on software and hardware maintenance [contract], and they use Apollo workstations," says Bennett. "If you ask any of those engineers, they think their DN3500s are the greatest thing since sliced bread. They may not be as fast as a Model 720, but [the engineers] are used to them, and those systems are bullet-proof. They've had the workstations a long time, and they're comfortable. I'm a firm believer in moving forward, but only if it's fiscally responsible."

This CAD shop is the kind of customer Tryonics loves. When those engineers need another workstation to add to the existing HP Apollo family, they may well go to Tryonics first. And what Tryonics will offer is a system that meets — or even beats — original manufacturing specs. Tryonics disassembles each system and replaces any worn parts. Cases are repainted or replaced.

The firm maintains a goal of supplying products and

services that are indistinguishable in quality from what the customer would buy from HP — if HP still had those products and services. "HP has the best quality going, and we try to mirror that in our manufacturing process," says Bennett. In fact, about one-half the employees at Tryonics are former Apollo and HP folks.

As a result of all this attention to detail, sales at Tryonics are strong enough to have Bennett and colleagues looking at expansion opportunities. They are moving into networking services, helping customers to optimize networks with a mixture of consulting, hardware and software. The firm is also considering the X terminal distribution market as an opportunity to move into the new equipment business.

For now, sales of remanufactured workstations, from the 3500 to the Series 700, as well as DN10000 systems remain brisk. When somebody needs a group of HP Apollo systems to augment an existing network, they will likely end up here. Sales outside the U.S. are picking up, says Bennett. And the systems those users need are likely already in the warehouse — waiting. — *Bill Sharp, Technical Editor*

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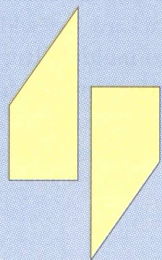
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# P e r s o n n e l

# M

By Paula Jacobs

Managing human resource (HR) functions has never been more difficult than in today's global economy. U.S.-based companies must comply with a raft of local and federal regulations, while those conducting business overseas must adhere to complex international laws, which can vary considerably depending on which countries are involved.

Tom Pike, director of MIS at Sensormatic, a world leader in loss prevention technology, says that a key problem his Florida-based company faces is acquiring the ability to handle multiple tax codes, both at the state and international levels. Because the Sensormatic company markets worldwide, it requires human resources and payroll software that can adapt to disparate local regulations and tax codes.

Although Hewlett-Packard has addressed the problem of converting applications to multiple languages, both human resource and payroll applications involve an additional set of country- and region-specific issues. To meet local needs, Sensormatic's European data centers have invested in client-



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Of Human Resources And Payroll Software

server technology, using a variety of packages that accommodate local requirements.

Meanwhile, companies operating strictly in the United States also face new administrative challenges in HR. The shift to cafeteria-style benefits plans — where employees choose from a menu of available programs — the availability of early retirement options, and the reality of employee layoffs as a way of life all require more flexible benefits administration and payroll systems. At the same time, in most companies, HR departments still are responsible for a variety of administrative functions, including job classification and attendance tracking.

Traditionally, powerful mainframe computers were used to track and process these activities. Today, however, a mixture of PCs, terminals and workstations is typical in most HR departments. And, as UNIX increasingly becomes an integral part of a company's enterprise-wide computing strategy, UNIX-based servers and workstations are replacing large mainframes.

According to Jim Douglas, vice president of research and

development at software supplier CompuServe/Collier-Jackson, "Historically, the HR function has been one of the areas that has received the least systems attention, because it neither produces revenues nor contributes to cost control. While HR/Payroll has been automated for benefits and check processing, most companies have not regarded this function as strategic."

Douglas notes that despite the recession, many specialized jobs go unfilled because companies can't locate suitably qualified candidates. "HR's function is to look at the investment in the employee strategically, and that's why there's increased interest in HR systems that will enable companies to retain investment in human capital," Douglas says.

Client-server architecture provides several advantages for the HR and payroll function. The ability to offload major tasks from the mainframe moves database and reporting functions to the network server, with edits and transaction processing handled on the PC. This architecture meets the needs of HR professionals who have become accustomed to the productivity



## BY TAKING ADVANTAGE OF OPEN UNIX

architecture, these UNIX HR and payroll packages offer the portability, interoperability and scalability required in today's enterprise-wide computing environment.

advantages of using PCs for managing administrative functions and want to continue to use their favorite PC word processing or spreadsheet package.

This demand for freedom on the desktop sharply parallels that of office users whose similar requirements spawned a new generation of office systems that integrate with a variety of word processing, spreadsheet and graphics packages. It's not surprising, therefore, that HR professionals, already familiar with the power of the desktop, also are demanding HR and payroll packages that incorporate GUIs, point-and-click and cut-and-paste capabilities, and the same consistent look-and-feel available on their Windows-based PC software packages.

### New Applications On File

**T**O ADDRESS THIS NEED, several HR and payroll software packages that support open systems and client-server environments have appeared on the scene. They include software designed specifically for the UNIX environment, and offerings from traditional mainframe software vendors who, in response to market demand for client-server architecture and open solutions, have ported their products to UNIX. Many of these software packages support both HP and other vendors' UNIX platforms, meet the flexible demands of multisite organizations and are suitable for multivendor, heterogeneous computing environments.

By taking advantage of open UNIX architecture, these UNIX HR and payroll packages offer the portability, interoperability and scalability required in today's enterprise-wide computing environment. These capabilities enable users to port their existing mainframe applications to UNIX platforms, use the same HR package on different vendor platforms and choose the package most suitable to their computing environment.

For example, when Bill Long, vice president-controller at Tampa-based Robbins Manufacturing decided to rightsize from a Unisys mainframe Series A to an HP 9000/832, the ability to maintain his existing software investment was a critical factor. The company already had been running the Lawson Human Resources System, including Payroll, Personnel, Benefits and Time Accrual, on its mainframe.

"That's why we were pleased that all we needed to do was to download our existing Lawson software from the mainframe," says Long, explaining that the client-server version of Lawson now runs on the HP 9000 under HP-UX. "Most important, except for the fact that the UNIX system is faster, our users have found that the software has the same look and feel as what they were accustomed to on the mainframe."

### Many Qualified Candidates

**C**OMPUSERVE/COLLIER JACKSON offers client-server versions of its World Class Series Human Resources and Payroll software. Originally designed for the HP 3000, the World Class Series software now runs on HP 9000 and HP 3000 systems under HP-UX, MPE/iX and MPE XL. World Class client-server applications sit directly on a PC or workstation running Microsoft Windows and/or OSF/Motif, and provide seamless and simultaneous access to both mainframe and desktop computing power.

Collier-Jackson has adopted a common set of standards across platforms and applications, so software on each platform has a consistent look and feel. The implementation of a separate I/O layer beneath applications provides flexibility and enables users in a client-server environment to take advantage of various database technologies, including SQL, TurboIMAGE, RMS and ISAM. The software is licensed per user and, depending on configuration, ranges from \$15,000 to \$20,000 and up to \$75,000 to \$100,000.

PEOPLE-PLANNER from Information Marketing Businesses Inc. is a software package targeted specifically at the retail market. The software consists of three modules: Time & Attendance, which automates employee time records; Scheduler, which automates employee scheduling; and Forecaster, which forecasts sales data and labor requirements. Originally developed as a PC solution, PEOPLE-PLANNER now runs on the HP-UX platform, and is priced at \$2,000 per module.

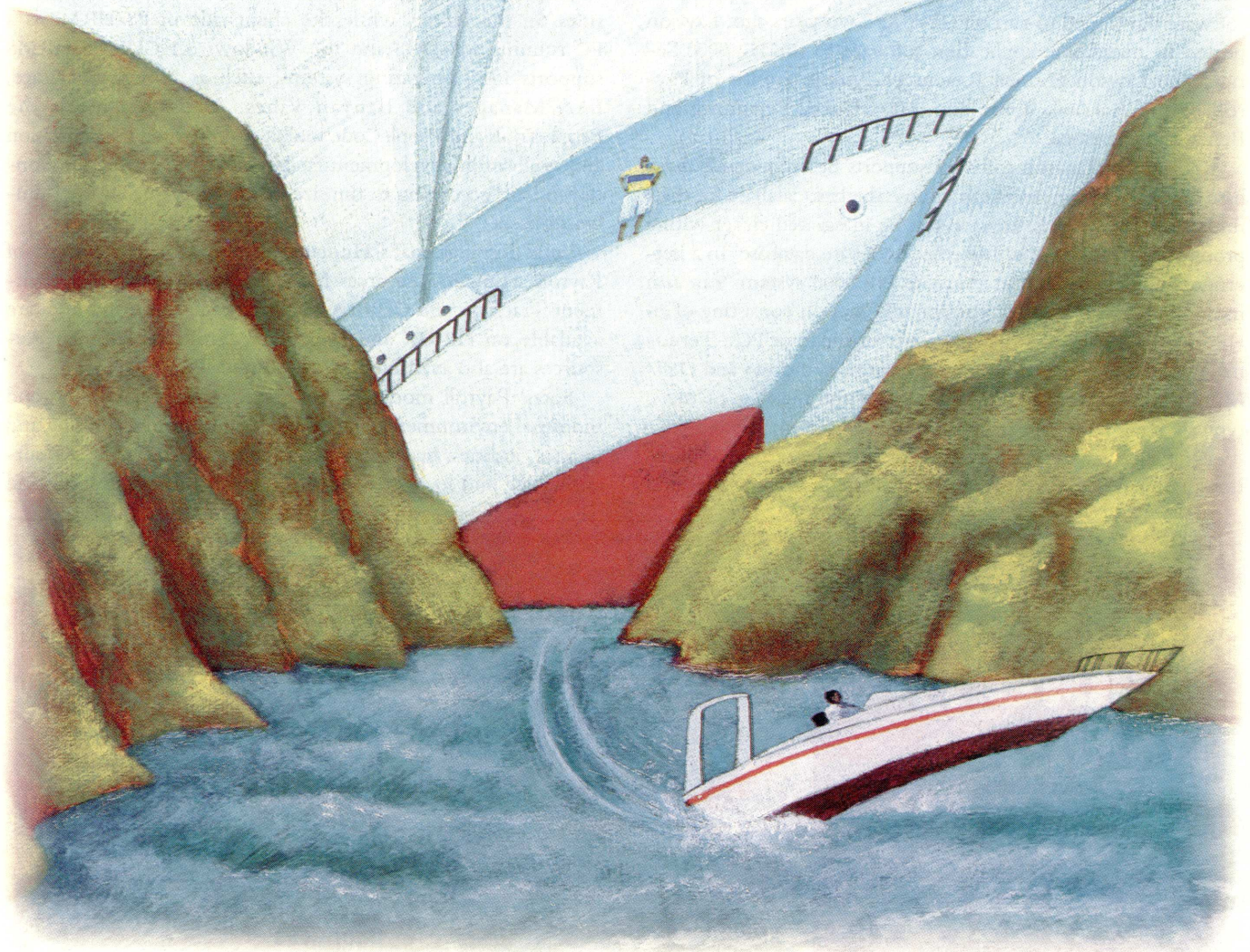
The Solution Series from Cyborg Systems is an integrated human resource management, payroll processing and benefits administration system that's available for both MPE/iX and HP-UX server platforms. Incorporating client-server architecture and relational database technology, the Solution Series features comprehensive flex benefits administration functionality and on-line query and reporting capabilities.

The Solution Series on-line payroll processing system features automatic calculation of up to 500 different earnings and deductions and all local, state and federal taxes. It enables the user to arrange direct deposits, perform check reconciliations, keep history records and figure labor distribution. The Cyborg General Ledger Interface can then be used to bridge the gap between payroll and accounting systems by eliminating the need for manual payroll data input.

The Solution Series also features the Time and Attendance



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Solution for comprehensive labor tracking and the COBRA Solution — a PC-based system which automates date sensitive, paper-oriented administrative tasks associated with COBRA compliance.

Lawson Associates Inc., a developer of commercial application software, and HP jointly market Lawson Financial, Human Resources and Distributed Management application software developed to run on HP-UX. Two years ago, Lawson ported its mainframe application software to the HP 9000 Series. The Lawson Human Resources System consists of Payroll, Time Accrual, Time and Attendance, Personnel and Benefits applications.

Because the Lawson software supports heterogeneous database implementation, users can choose the best database for their implementation needs. Lawson can be integrated either with a proprietary RDBMS or an Informix or Sybase database. In a heterogeneous environment, multiple HP 9000 systems can run multiple databases, with a typical configuration consisting of an HP 9000 server and a cluster of dumb terminals or PCs. Terminal emulation is used to support Microsoft Windows and OSF/Motif. The software is priced based on the number of users, typically ranging from \$20,000 and up.

PeopleSoft's PS/HRMS consists of three integrated applications: Human Resources, Payroll and Benefits. Designed around

a client-server architecture, PS/HRMS supports multiple relational database systems (RDBMSs), Oracle and ALLBASE databases, and the HP 3000 or HP 9000 running HP-UX and HP MPE/iX, as well as other hardware platforms.

HP users can handle management of recruiting, benefits and personnel administration, training and development, career planning, position control and flexible benefits. The database resides on the server, while the client side of PS/HRMS is a PC running MS-DOS and the Windows 3.1 GUI. PS/HRMS supports LAN operating systems, such as Novell NetWare, LAN Manager and Banyan Vines. Also available is the PeopleTools and PeopleCode toolkit that provides customization and application development facilities. Pricing is configuration-dependent, according to the size of the database and the number of users.

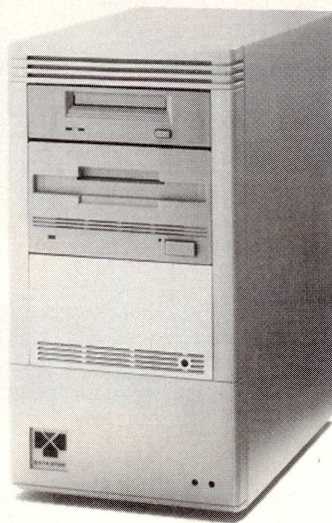
Sotas International's Human Resources System consists of Payroll, Human Resources Management, Applicant Recruitment Tracking and COBRA Management. These modules are available on HP-UX and MPE/iX. Payroll and Human Resources are also available in MPE X and MPE XL.

Sotas' Payroll module is designed for diverse business and industrial environments, including manufacturing, banking and finance, utilities, health care, communications, retailing, insurance, state and local government, construction, wholesale and

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distribution. The Human Resources management module is designed to support a range of reports for auditing controls and regulatory reporting requirements, such as EEO, ERISA, FLSA and OSHA.

The Applicant Recruitment Tracking System module tracks applications for all types of positions and generates position posting sheets. COBRA management automates day-to-day processing requirements to comply with the federal government regulations pertaining to the Consolidated Omnibus Budget Reconciliation Act (COBRA).

Pathfinder Software's StarGarden HR is a complete HR system that incorporates Training and Development, Health and Safety, General System Features, Application Tools and End-User tools.

StarGarden was developed with Cognos Powerhouse, which allows processing to be performed on the host, but presented on a PC running Windows. Powerhouse Runtime is an operating prerequisite. StarGarden is priced according to the number of employees at a company, rather than on a per user basis. Typically, for a midsize company (1,000 to 20,000 employees), the cost of StarGarden ranges from \$75,000 to \$150,000.

SAP (Systems, Applications and Products) America, has begun shipping (as of January 1993) a client-server solution, the R/3 System, which offers the same functionality as SAP's mainframe product, the R/2 System. SAP's integrated software family links business functions such as human resources, accounting,

manufacturing, materials management, sales and distribution and plant maintenance.

The current release of SAP supports human resources, financial and fixed asset accounting, and several other areas, and runs on HP-UX and MPE/iX platforms. The R/3 System supports several configurations, including a front-end presentation server and back-end database server, a standalone environment, and a LAN or WAN environment. On HP platforms, the R/3 System currently supports Oracle database management, OSF/MOTIF, Presentation Manager and Windows 3.1.

Oracle Personnel from Oracle Corp. is an integrated component of Oracle Financials, which offers a complete set of client-server financial accounting and management applications available on a variety of hardware platforms, including HP-UX servers. Using Oracle's own relational database, Oracle Personnel allows users to define their own employee data requirements and design their own reports without MIS assistance. Clients supported include PCs, Macintoshes, and workstations from HP, Sun and other vendors.

Last but not least, Dun & Bradstreet Software, a leading vendor of financial software applications in the HP market, plans to offer payroll and personnel software on HP-UX in the near future. Currently, the company offers decision support and client-server tools that work in conjunction with these products.

The list of qualified candidates is almost endless.

#### COMPANIES MENTIONED IN THIS ARTICLE:

CompuServe/Collier-Jackson  
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Dun & Bradstreet Software  
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Minneapolis, MN 55413  
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Oracle Corp.  
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Redwood Shores, CA 94065  
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Pathfinder Software Inc.  
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PeopleSoft Inc.  
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SAP America Inc.  
International Court One  
100 Stevens Dr., Suite 350  
Lester, PA 19113  
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#### Flexible Benefits Package

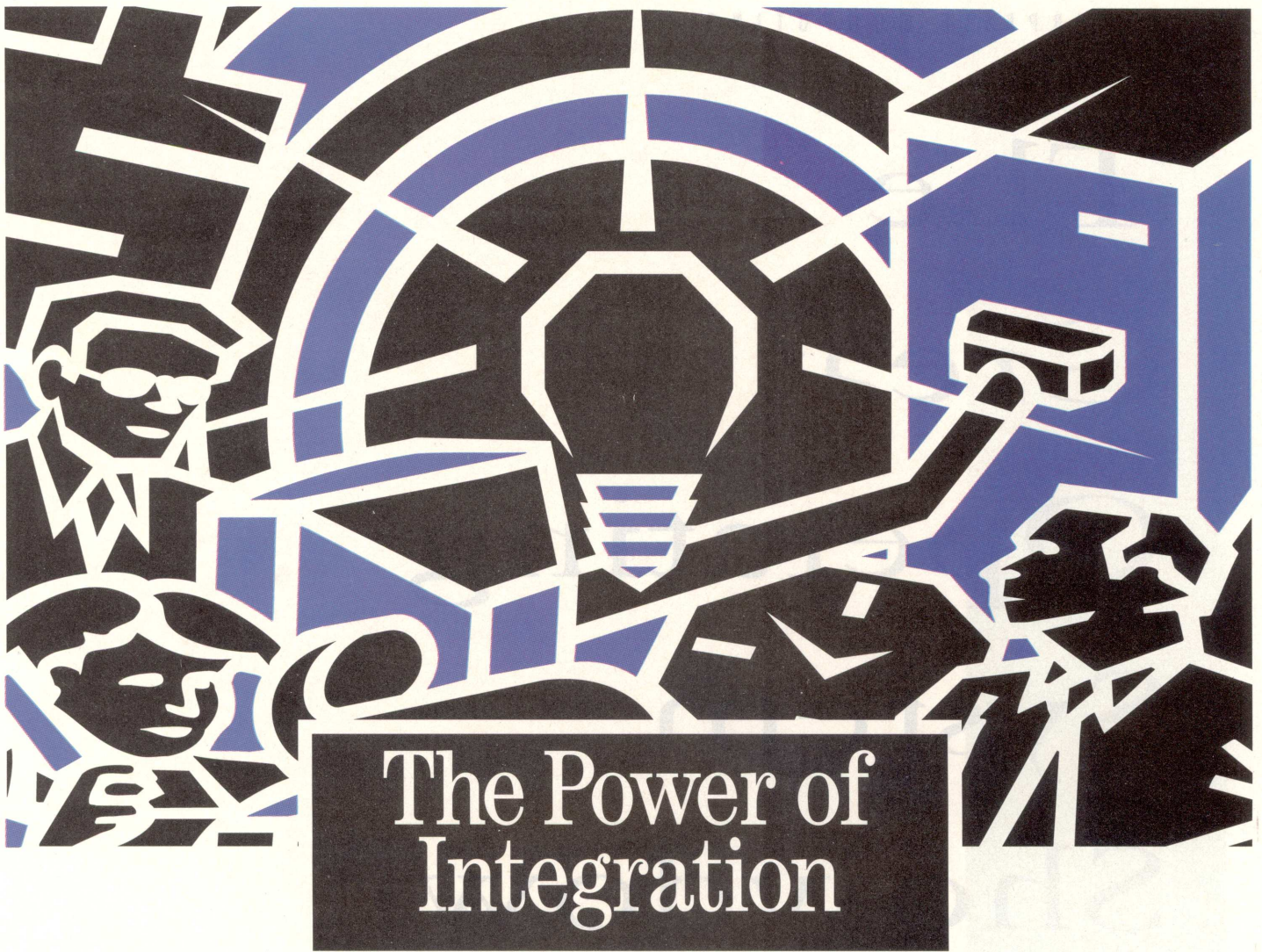
“CLIENT-SERVER ARCHITECTURE PROVIDES numerous benefits for HR functions,” says Fred Baugham, MIS manager at Sensormatic, which plans to integrate UNIX systems within its proprietary environment. “It provides open architecture, the ability to do validation at the PC and offload the work from the mainframe, plus the freedom to migrate from MPE to UNIX.”

The new generation of HR software, with its client-server architecture, can significantly reduce the host computer's workload by transferring some of the work traditionally done by a host computer to the desktop. Additionally, in the HR environment where positive communications is a watchword, client-server software enables information to flow quickly and easily between employees and groups in the same company, improving both employee communication and decision-making processes.

Most important, the use of such products provides flexibility and freedom of choice, which are key to a positive and productive working environment. — *Paula Jacobs is a marketing consultant based in Framingham, MA. She can be reached at [pjacobs.world.std.com](mailto:pjacobs.world.std.com).*

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# The Great Operating System Showdown

BY GORDON MCLACHLAN

**This Year OSF/1 And Windows NT Will Challenge UNIX' Once-Exclusive Claims To Portability, Interoperability And Standards. So Far, HP Is Sticking To Its Guns With HP-UX.**

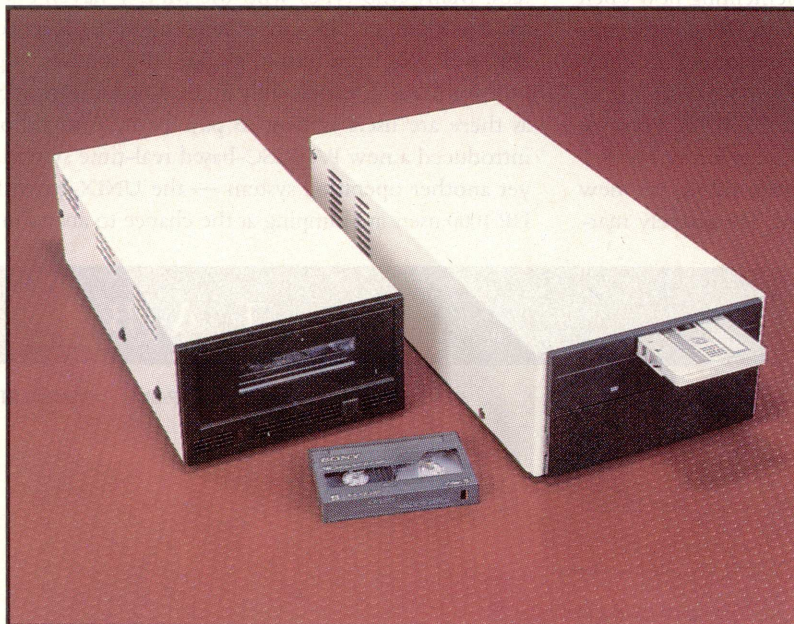


When it comes to operating systems, 1993 promises to be an interesting year, as two new and much-hyped "open" architectures make their debut against UNIX. Aimed at overlapping markets, the OSF/1 UNIX-derivative from the Open Software Foundation (OSF) and Microsoft Corp.'s Windows NT promise to make life interesting for vendors and users alike. It will be a pivotal year for HP. As PA-RISC gets some real price/performance competition from DEC's Alpha and IBM's POWER RISC, users will be voting with their pocketbooks to let HP know if its present operating system strategy will pay off.

Early to recognize the importance of open systems and standards, HP was one of the founders of OSF and a charter member of practically every standards body in existence. HP can (and



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does) proudly play a role in setting and implementing new open technologies. Still, the seven operating systems HP already supports have prevented the company from developing a coherent platform strategy for open systems.

With HP-UX, MPE/iX, MPE V, Domain OS, RTE, Portable NetWare and the new UNIX-based real-time offering HP-RT already in the stable, it's hard for HP to justify riding any new horses at this point. Granted, of these seven, HP actively markets only four, MPE/iX, HP-UX, HP-RT and Portable NetWare — the others having been relegated to "mature product" status. Nonetheless, HP has made extensive commitments to continue support for all of the operating systems currently used by its installed base. And with Native NetWare for PA-RISC already promised for 1993, adding yet another operating system stepchild seems out of the question.

Thanks, in part, to operating system overload, HP has been forced to take a cautious approach to both OSF/1 and Windows NT. Rather than productize the whole Mach kernel-based OSF/1 operating system as DEC and IBM have promised to do, HP lags behind with a commitment only to layer OSF/1 functionality on top of HP-UX. Instead of buying into NT early as DEC and NCR have done, HP plans to play a waiting game to see if Microsoft's latest wunderkind is worth the bother. Will this strategy work? We'll find out when the chips are counted.

### Loyal To A Fault?

ONE BIG PROBLEM HP faces in developing a coherent operating system strategy is the high satisfaction level of its somewhat fragmented installed base. The Apollo/Domain crowd has been less than enthusiastic about moving to HP-UX. And thanks to vigorous lobbying efforts on the part of InterWorks, the HP Apollo Workstation Users Group (formerly ADUS), HP has promised to support Domain until the year 2000, albeit without any major enhancements.

MPE V and RTE users haven't been easily shaken from their platforms, either, and HP has offered them similar guaran-

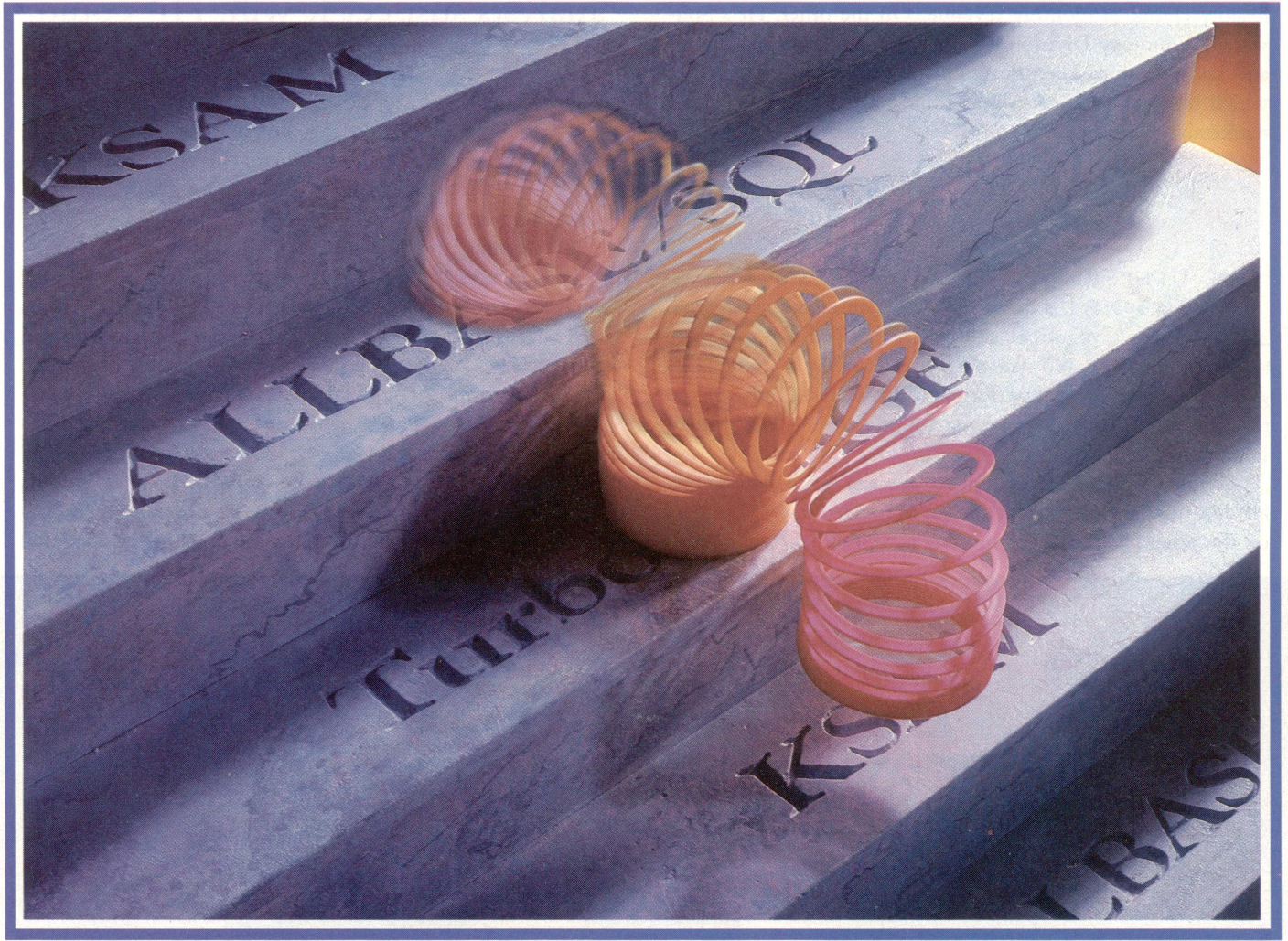
tees. Many MIS-types who use MPE V haven't seen the need for PA-RISC, POSIX-compliance or MPE/iX as yet and probably will hold tight until they do. HP promises to provide support for MPE V, presumably at an ever-increasing price, as long as there are users willing to pay for it. And although HP just introduced a new PA-RISC-based real-time system, which runs yet another operating system — the UNIX-based HP-RT, few HP 1000 users are jumping at the chance to abandon their trusted

## TABLE

Feature	OSF/1	USL SVR4	HP-UX	Windows NT
<b>API Standards</b>				
POSIX 1003.1	Y	Y	Y	Y
POSIX 1003.4 Threads	planned	N	planned	N
ANSI X3J11 C	Y	Y	Y	Y
X/Open XPG3	Y	Y	Y	N
USL SVID Issue 2	Y	Y	Y	N
4.3 BSD	Y	Y	Y	N
OSF Applications Environment				
Specification (AES)	Y	planned	Y	N
OSF Motif	Y	planned	Y	N
32-bit Windows API	N	N	N	Y
OS/2 API	N	N	N	Y
16-bit Windows	N	N	N	Y
MS-DOS	N	N	N	Y
<b>File Systems</b>				
BSD Virtual File System	Y	Y	Y	N
OSF Logical Volume Manager	Y	N	Y (800)	N
System V	Y	Y	N	N
Network File System (NFS)	Y	Y	Y	N
MS-DOS FAT	N	N	N	Y
OS/2 HPFS	N	N	N	Y
NTFS	N	N	N	Y
<b>Networking</b>				
STREAMS	Y	Y	planned	Y
BSD sockets	Y	Y	Y	Y
X/Open XTI	Y	Y	planned	N
ARPA protocols				
(TCP, IP, UDP, ICMP, ARP)	Y	Y	Y	opt.
ARPA Services				
(telnet, FTP, ping, etc.)	Y	Y	Y	opt.
uucp	Y	Y	Y	N
NetBIOS/NETBEUI	N	N	N	Y
OSF Distributed Computing				
Environment (DCE)	Y	planned	Y	N
Serial line IP (SLIP)	Y	N	Y	N
<b>Kernel Features</b>				
Symmetric MP	Y	Y	Y	Y
Real time features	Y	Y	N	N
Kernel threads	Y	N	N	N
"Micro kernel" architecture	Y	N	N	Y
Security				
"Orange Book" security level	B1-B3	B2	C2	C2
<b>High Availability</b>				
Powerfail recovery	N	N	Y (800)	N
Processor failsoft switchover	N	N	Y (800)	N
Mirrored disk	Y	N	Y	N



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Depending on who you talk to at HP, the company's chinese menu of installed-base platforms is either a blessing or a curse. On the one hand, support fees for mature operating systems, particularly for the commercial MPE V platform, generate a healthy chunk of monthly revenue. On the other, HP's Software Technology Division expends considerable time, money and know-how to keep those old proprietary solutions alive, which limits the resources that could be used on new, more marketable platforms.

### High Stakes, Low Margins

**B**UT HP'S RELUCTANCE to embrace the Mach kernel-based OSF/1 is based on other considerations as well. From a practical standpoint, any new operating system is a gamble. No matter how extensively it's tested, it's going to have bugs and performance problems. HP perceived that it was less risky and cheaper to enhance HP-UX than to migrate to OSF/1.

To further justify its position, HP also can make the case that HP-UX still has functionality that isn't provided in OSF/1. DEC, on the other hand, may be moving to OSF/1 because it has to

---

If Bill Gates' supposed  
UNIX-killer takes off the way  
many industry pundits and  
analysts suspect it will, HP could  
be left holding the bag.

— its traditional UNIX offering, Ultrix, is notoriously weak. HP, by contrast, need only incorporate the open systems benefits of OSF/1 into its already stable — and highly successful — operating system platform.

HP's reasoning on Windows NT is less clear. Except to say that its engineers are looking at it (and who isn't), HP is being awfully reticent and non-committal about NT. If Bill Gates' supposed UNIX-killer takes off the way many industry pundits and analysts suspect it will, HP could be left holding the bag, while DEC's Alpha platform picks up low-end server sales.

By the same token, NT hasn't materialized as yet, and delivery may be significantly delayed. Also, and far more important from HP's perspective, unlike OSF/1, hardware vendors don't have much control over NT once it's ported to their platform. Cutthroat pricing from Microsoft could ruin operating



# A smart way to spe



system profit margins for the vendors while stealing market share from both HP-UX and HP's Native NetWare implementation.

### What's In This For You?

**H**OW ARE HP CUSTOMERS going to fare with their vendor's strategy? *Table 1* shows how the features of OSF/1, HP-UX and Windows NT compare. Considering features, it doesn't look like HP-UX users lose much in functionality by passing up NT or OSF/1 and the Mach kernel. Once HP provides the necessary OSF/1-compliant layers to HP-UX, including the necessary application programming interfaces (APIs) and Distributed Computing Environment (DCE) components, it will clearly have one of the strongest offerings in the game.

In fact, HP-UX will be fully compliant with the OSF/1 environment, whether HP uses the Mach kernel or not. And the OSF isn't likely to expend much effort generating industry support for the Mach kernel. Even though the OSF was originally chartered to debut a new flavor of UNIX that didn't contain any AT&T source code, its mission now has shifted to defining distributed computing and system management environments, and the Mach-based operating system seems to have become almost an afterthought.

HP may sacrifice something, however, by not taking the opportunity to use the new kernel in its own software offerings. Mach is an example of a microkernel architecture, and true to the breed, it offers some advantages that the older, monolithic kernel of HP-UX can't match.

### Microkernels — In A Nutshell

**T**O UNDERSTAND THE importance of the microkernel, or client-server operating system model, let's take a look at the services a typical operating system provides:

#### *User interface:*

- User command set.
- Graphical user interface.

#### *Input/Output:*

- Device I/O.
- Networking.
- Inter-program communication.
- File systems.

#### *Process management:*

- Scheduling.
- Memory management.
- Multitasking.

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# Full interoperability.



- Multiprocessing.

**Programming tools:**

- Language support.
- Debugging tools.
- Application programming interfaces.

**System Administration:**

- File system layout.
- Management utilities.

The differences among operating systems lie not only in what services they provide, but also in how they are provided. Functions can be built into the operating system kernel, or they can be layered on top of it as applications. In Mach parlance, these services are provided by application programs in "user space," or as part of the kernel in "system space."

The idea of the microkernel architecture exemplified by Mach is that the kernel is small, handling only the critical functions of process scheduling, interprocess communications, memory management and local device I/O. Everything else is left to run in user space as a server process.

## Modular, Not Monolithic

**T**HE MACH KERNEL architecture has several advantages. Most obvious is that the kernel no longer defines the "personality" of the operating system. The Mach kernel can be camouflaged by servers to look like System V, BSD, HP-UX, AIX or any other UNIX. It could even be made to look like OS/2, Windows NT (although Microsoft is not using Mach), or even MPE V. As a matter of fact, IBM is planning to use Mach as the basis for both OS/2 and the "Pink" object-oriented operating system in the future.

Windows NT also uses a microkernel to handle basic operating system chores, and could be enhanced to go head-to-head with UNIX by adding the right compatibility subsystems. Initially, however, Microsoft will only provide 16- and 32-bit Windows, MS-DOS, OS/2 and POSIX APIs.

The modularity of the microkernel approach lets different persuasions of an OS be packaged with the minimum code necessary to provide desired functionality. Users wouldn't be stuck with 100 MB of unnecessary BSD or System V code if all they wanted were an OS/2-like. On the other hand, their OS could be easily upgraded to new functionality by adding the right server processes. With a monolithic system like HP-UX, it's an all-or-nothing proposition.

Microkernel architecture is simpler, making it easier to port to different platforms, and easier to change and debug. Servers in user space can be developed and debugged while the operating system is up and running, using normal development tools.

Putting operating system services into user space also provides a more robust operating system, because the servers each run as separate processes that are insulated from one another. A rogue process won't take down the whole operating system.

Another important advantage is that the modularity of the architecture lends itself to developing true distributed and multiprocessor implementations, which is difficult with the monolithic UNIX of old.

In the long run, these factors will become increasingly important, and are more than a matter of aesthetics. If you look at the shopping list of features and API standards that today's open operating systems are supposed to support, you might expect that stuffing them all into one monolithic operating system could be a nightmare. The modular approach behind the microkernel architecture makes it much easier to organize these so they can be kept separate, while still sharing common components quite easily. This modularity, plus the mere fact of starting with a clean design slate, lets designers make the whole mess more object-oriented, and better positioned for future enhancements.

While the jury is still out on the effectiveness of the microkernel architecture in practice, it's also not clear if the fins and chrome approach that HP is taking will work over the long haul.

## The Trouble With NT

**N**OW, WHAT ABOUT HP's lukewarm response to NT? Does an NT-less strategy make sense for HP and its customers? From HP's perspective as an open systems company, NT may not be much of a threat. As the feature comparison shows, NT doesn't provide much compatibility with existing UNIX versions. NT may stop current DOS/Windows users from making the leap to UNIX, but it probably isn't going to make many current UNIX users jump ship.

Microsoft, although a member of the OSF, isn't being very clear on how or when it will incorporate OSF/1 components into NT. It has provided as OSF-compliant remote procedure call (RPC) facility into NT, but it is not including other Distributed Computing Environment (DCE) functionality, or the support for UNIX file systems, command sets or APIs it would need to really be competitive with UNIX. NT in its current form exists in limbo somewhere between the extremes of DOS and the new improved, unified UNIX embodied in OSF/1 and SVR4.

So what's the problem? Just take a look at the competition: DEC has already committed to putting NT up on its Alpha, (a MIPS-based implementation had been planned for the start), and makers of multiprocessor servers using Intel processors — like NCR and Sequent — have also climbed on the bandwagon. Even IBM, though likewise ignoring NT, has a new operating system in the works to address the middle ground. HP, home alone again, seems to have no such plans. That's the problem.

Maybe if Microsoft started an IEEE NT committee ...

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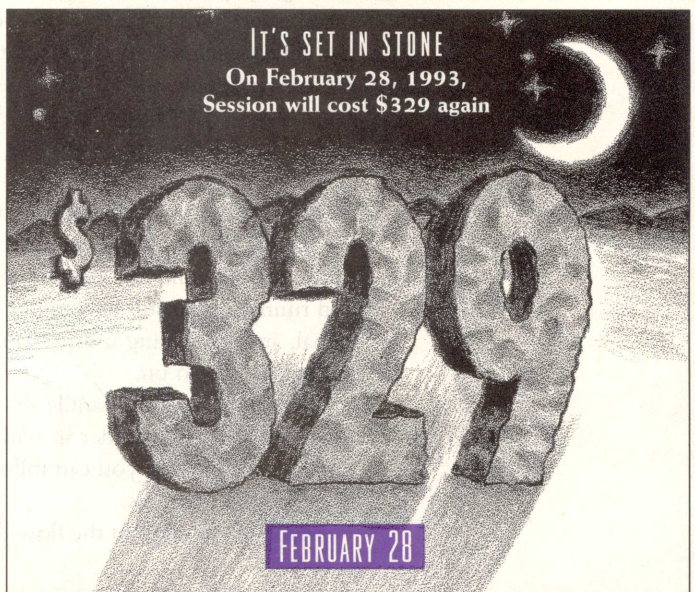
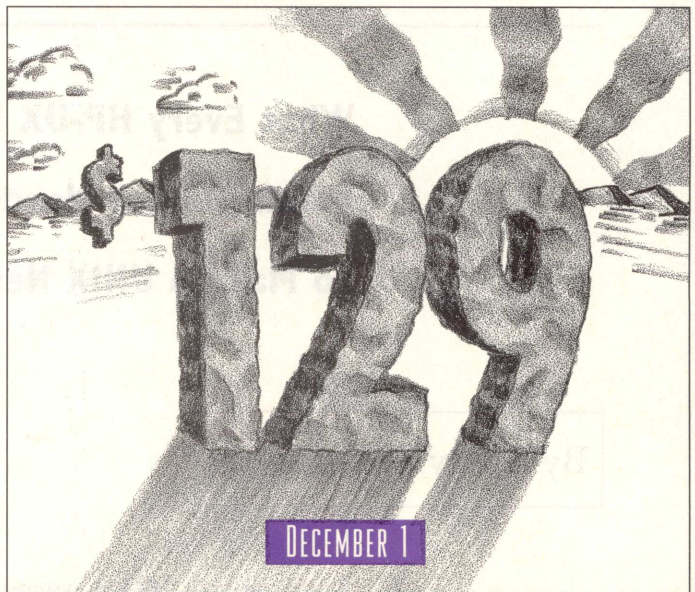
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# Set 'Em Up

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## **What Every HP-UX System Administrator Needs To Know To Make A UNIX Network Go**



By Marty Poniatowski

Setting up your HP-UX system could be simplest computer installation you'll ever see — especially if your system is delivered with HP Instant Ignition. As part of the Instant Ignition program, the HP-UX operating system is preloaded on your system, so all you have to do is unpack the boxes, connect the cables and turn on the computer. HP-UX boots up and you're finished.

Even though you'll probably be quite pleased with yourself for having accomplished so much in so little time, Instant Ignition really is only the beginning. Although your system is up and running, you still have much to do to make it fully operational, such as adding users, enabling networking, loading applications, and so on.

To help you get a handle on the tasks you'll have to perform and the rough order in which to perform them, *Figure 1* displays a flow chart you can follow for setting up workstations and multiuser systems.

Many of the steps in the flow diagram are simple procedures



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you can perform with the System Administration Manager (SAM). SAM is an HP-UX system administrator's best friend. Except for initial system setup, you can perform most of your routine system administration functions with SAM.

### Go With The Flow

I PREPARED THE FLOW diagram while installing an HP 9000 Model 827 multiuser system, and an HP 9000 Model 730 workstation portion. Here's a description of each of the steps in the flow diagram.

**Assemble Hardware:** The Models 827 and 730 were delivered with owner's manuals that featured the steps to set up the systems, including diagrams. There isn't much to it. Just unpack the boxes, connect the cables and power up.

Consider all the material you think you'll need to get your systems up and running. Here is a checklist of items to review:

- Make sure you have LAN cable (twisted-pair, thin net, and so on) of the length you require.
- Make sure you have MAU to attach cable to a connector, such as twisted-pair to an AUI.
- Be sure you have sufficient power and power outlets.
- Think about system names. You'll want to know system names in advance so this doesn't slow your installation.
- Have IP addresses ready. If you don't use IP addresses, HP can provide you with class C addresses.

**Review Instant Ignition Configuration:** Most HP systems can be delivered with Instant Ignition, which was the case for both the 827 and the 730. Whether your system comes with Instant Ignition or not, I suggest you carefully review your HP-UX documentation to determine which HP-UX filesets you need to have loaded.

**Understand Default Disk Configuration And Add Disks:** Workstations and multiuser systems differ with regard to the default disk configurations. Workstations won't have partitioned disks, and multiuser systems will use a default disk configuration.

Because the 827 in my example was delivered with Instant Ignition and two internal 1.35-GB disks, it came with the default disk configuration (opt 009) shown in Figure 2.

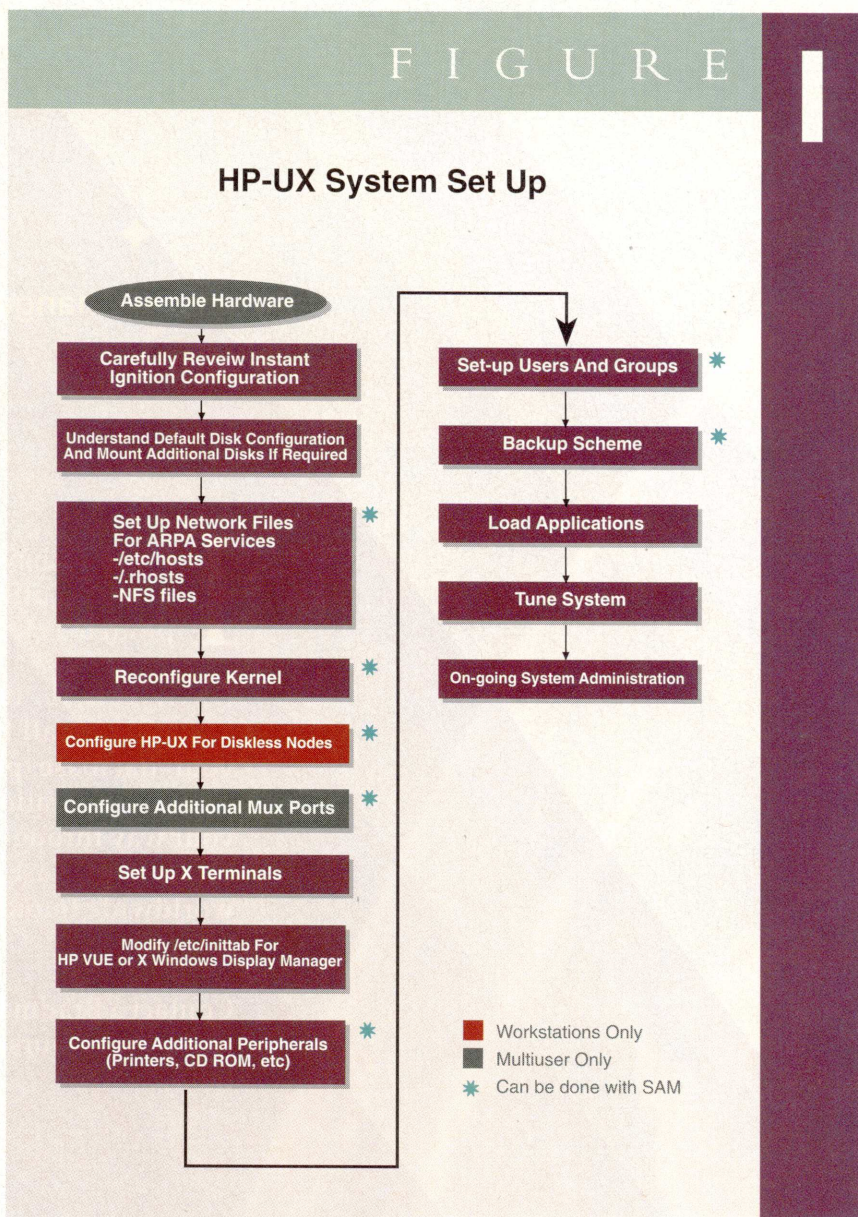
Your HP technical consultant can provide

you with the default Instant Ignition disk configuration for whatever size and number of disks you have ordered.

**Set Up Network Files:** Two networking services are found in virtually every installation: ARPA (Advanced Research Projects Agency) Services and Network File System (NFS) services.

There is a lot to understand about ARPA and NFS. The good news is that with SAM it's a trivial matter to get networking running.

The first networking product to configure on your system is HP 9000 ARPA Services. This is a combination of ARPA Services and Berkeley Services.



*A flow chart to guide in the set up of workstations and multiuser systems in your HP-UX setup.*



ARPA Services provides communication among different operating systems. The product includes File Transfer Protocol (FTP) to transfer files, TELNET for file transfer, and the Domain Name System for large network communication.

Berkeley Services provides communication among UNIX systems. The commands include remote copy (**rcp**) for UNIX-to-UNIX copy, remote login (**rlogin**) for login to a remote UNIX system, remote shell (**remsh**) to issue a remote UNIX command, and remote who (**rwho**) to find who is logged in on a remote system.

NFS allows you to mount disks on remote systems so that they appear as though they are local to your system. Similarly, NFS allows remote systems to mount your local disk so it looks as though it's local to the remote system.

**Reconfigure Kernel:** The HP-UX kernel supplied with your system is probably sufficient to meet your needs. You may, however, need to reconfigure your kernel for various reasons. There are several dimensions to your HP-UX kernel, some of which you may need to modify in order to reduce the size of your kernel, add functionality to your kernel or have your kernel parameters meet the requirements of your application. You should be able to make any modifications required to your HP-UX kernel through SAM and also have SAM build a new kernel for you.

**Configure HP-UX For Diskless Nodes (Workstation Only):** Diskless workstations need an HP-UX kernel to boot, just as the diskless server needs a kernel to boot. Through SAM, you can build diskless kernels for all your diskless nodes.

**Configure Additional MUX Ports (Multiuser Only):** The console is configured on one of the 827 MUX ports. You can configure additional MUX ports for terminals by running SAM.

**Set Up X Terminals:** Connecting X terminals is a two-part process: First you must load the X server software on your system, and then you must run the administration script that performs all the necessary configuration for you.

Loading the software is a simple **update** procedure. You run **update** using digital audio tape (DAT) or CD-ROM as the update media.

Update loads on your system the software necessary to support an X terminal. You can now type **/usr/bin/X11/700X/admin/xtadm** to run the script that fully configures your X terminal.

**Modify /etc/inittab:** When your system boots HP-UX, it looks to **/etc/inittab** to define the run level and all of the processes that will be run at start up. If you have connected X terminals, you will have to modify **/etc/inittab** to boot either the X Window System display manager or the HP Visual User Environment (HP VUE) display manager.

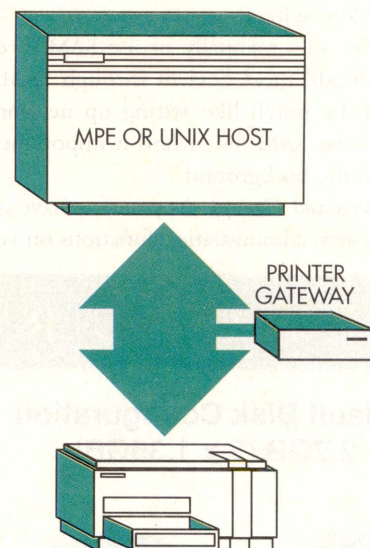
Entries in **/etc/inittab** have the following format:

```
label:run state:action:process
```

**Configure Additional Peripherals:** As you progress through

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# AS YOU ADD PERIPHERALS TO your system, you will have to either add device files manually or use SAM to create them for you.

the installation, you will reach a point at which you need to add the additional peripherals that are part of your system. A typical installation will have terminals, printers, a DAT drive, a CD-ROM drive, and so on.

As you add peripherals to your system, you will have to either add device files manually or use SAM to create them for you. You can add most devices through SAM. I find adding peripherals to be much like setting up networking; that is, I almost always use SAM, but I find it important to know what is going on in the background.

**Set Up Users and Groups:** As you may have guessed by now, performing system administration functions on your HP-UX sys-

tem is easy. It's the planning that takes time and effort. Setting up users and groups is no exception. Thanks to SAM, doing just about anything with users and groups is simple. The one exception, however, is HP VUE customization. SAM doesn't really help with HP VUE customization, and it can be quite tricky to modify your HP VUE setup manually.

**Set Up Backup Procedure:** I could tell you to run SAM to perform your full and incremental backups, and that would be all I'd have to tell you. SAM has an intuitive user interface that asks you what you want to back up and when you want to back up, and it does it for you! Like all system administration activities in the UNIX world, you need to know some background before you perform a backup. The first thing to consider is the schedule for your backup, and the second is the technique for your backup.

The **fbbackup** command is the backup program used by SAM. It's the fastest backup program that comes with HP-UX. You can back up any files and directories you wish and selectively restore them. The **fbbackup** command, however, is an HP-UX-only command. Here is the format of the command:

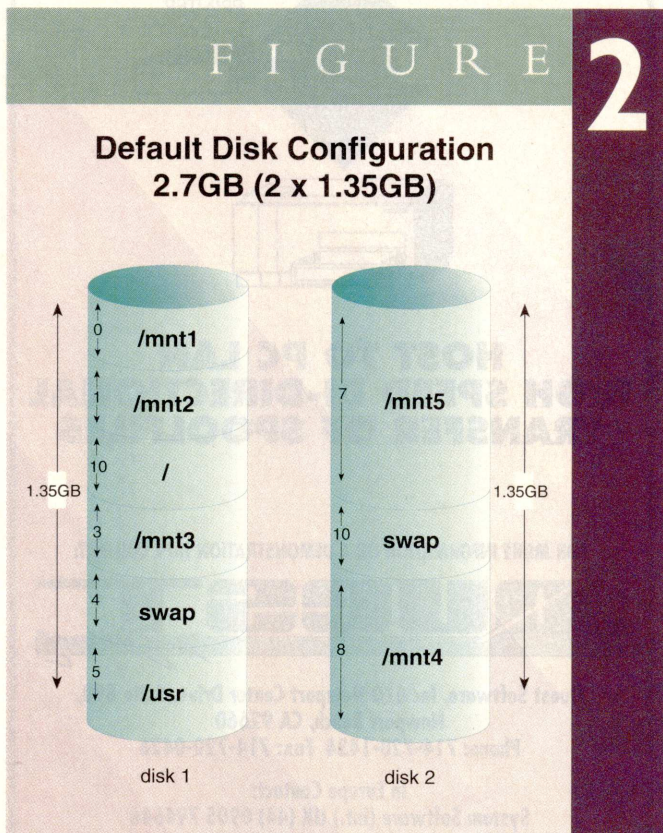
```
fbbackup -f device [-0-9] [-u] [-i path] [-e path] [-g graph]
-f device: The tape drive for the backup.
[-0-9]: This is the level of backup. [-i path]: Include backup
path.
[-e path]: This excludes the path from the backup.
[-g graph]: Graph file contains file to be excluded.
```

**Load And Tune System For Applications:** Loading applications on your system ranges from the easiest 15 minutes you'll spend, such as loading FrameMaker desktop publishing or HP SoftBench, to a long stressful endeavor, such as loading certain database applications. Once you have loaded your applications, however, you have to make sure your system is tuned for them. This is mostly a cookbook procedure of making sure you have the right kernel parameters set up, as I discussed earlier under the "Reconfigure Kernel" heading.

**Perform Ongoing System Administration Tasks:** It never ends. This is good news if you need to keep making a living for a few more years. There are enough ongoing tasks and new technologies that will be introduced into your environment to keep you busy. Here are the tasks system administrators deal with after initial installation:

- Monitor overall system resource utilization, including CPU, disk (file system usage), networking and swap space.
- Perform backups based on backup plan.
- Restore files when required.
- Keep printers and plotters running.
- Make changes to the network configuration.
- Update HP-UX with new releases.
- Update applications with new releases.

— Marty Poniatowski is a technical consultant in computer-aided engineering for Hewlett-Packard in Stamford, CT.



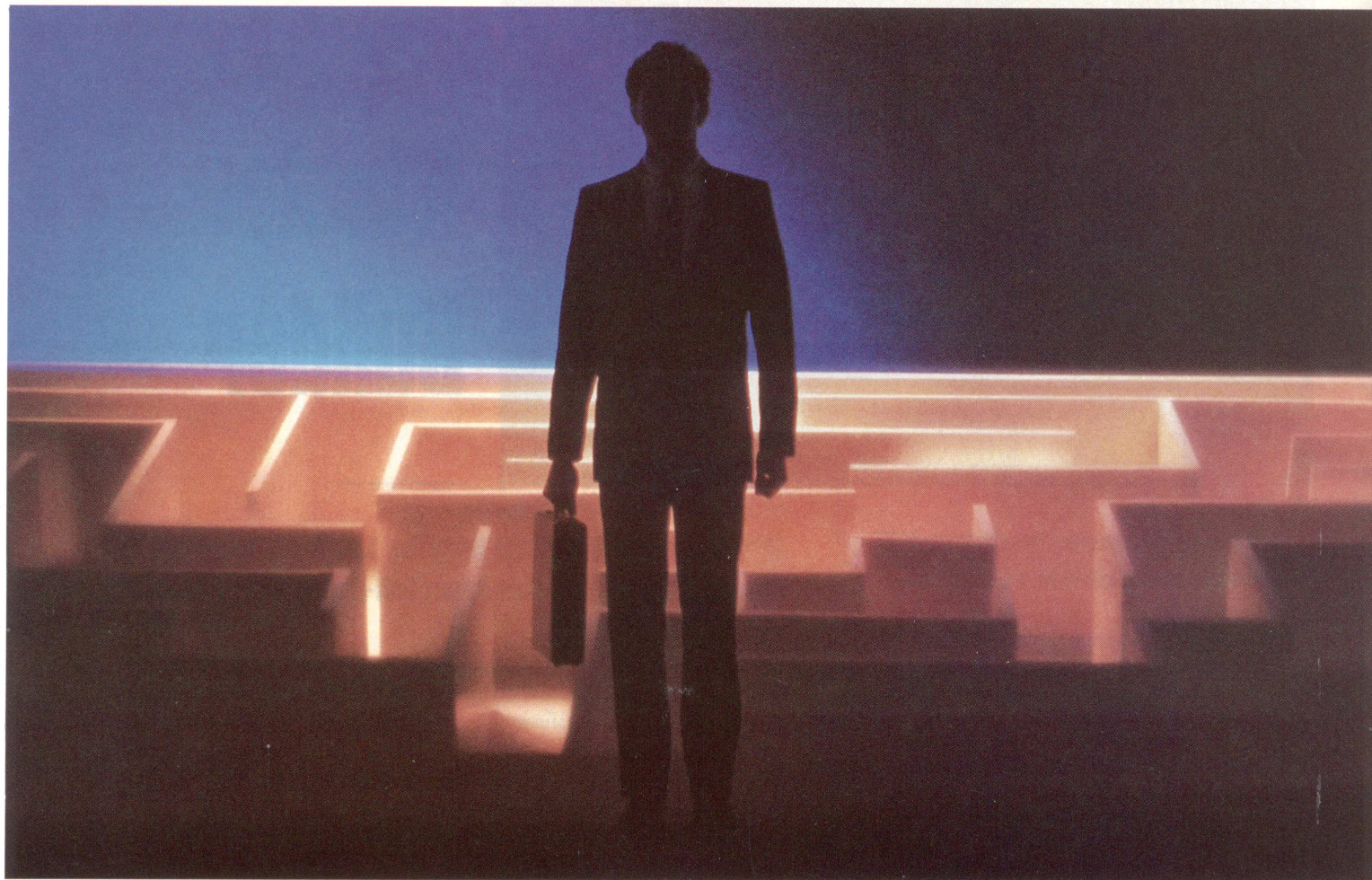
A default disk configuration (opt 009) for the HP 9000 Model 827 with Instant Ignition.

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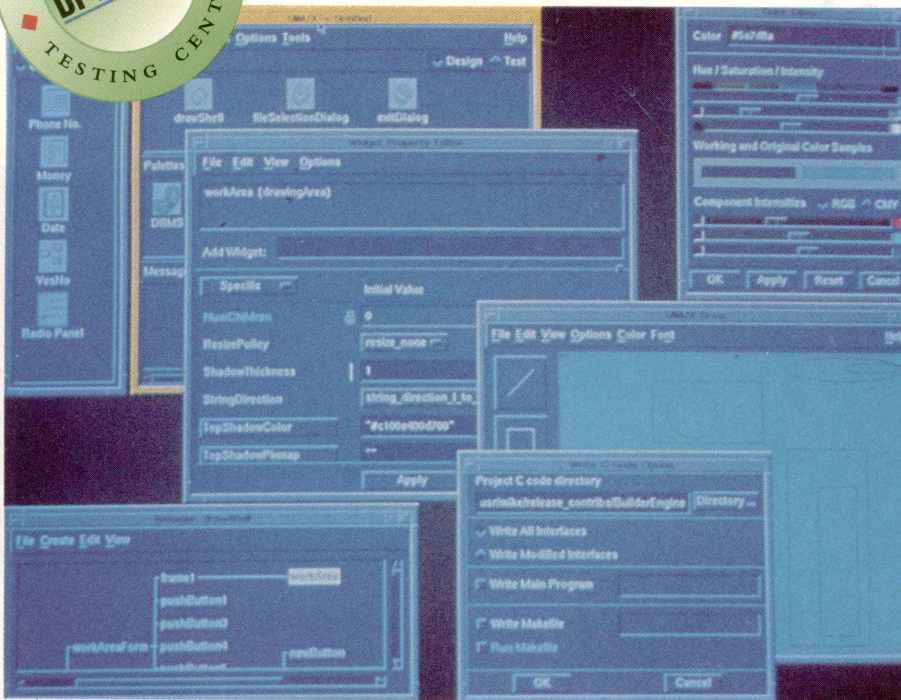
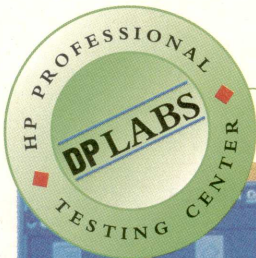
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## HP's Interface Architect Supplies The Tools You Need To Design GUIs — And Construct Full-Blown Visual Applications

An architect is "one who designs and supervises the construction of large structures." This definition could also apply to HP's Interface Architect 2.0, a software development toolkit that not only enables users to create graphical user interfaces (GUIs) for existing, command line-oriented software, but also offers the ability to develop entire, visually-oriented applications.

Users in multivendor environments may know Interface Architect as UIM/X from Visual Edge Software (St. Laurent, Quebec). Visual Edge OEMs UIM/X to HP and several other vendors, some of whom, like HP, rename it for resale into their own markets.

If your function as application "designer" means completing more mundane tasks such as writing a shellscript or configuring a desktop manager, you can't be blamed for feeling overwhelmed at the prospect of building not only a GUI but an application as well. For every facet of a visually-oriented application, from mouse clicks to push buttons to dialog boxes, whole levels of code must be generated to present and carry out each detail. For the purposes of this review, we took on the task of designing a drawing editor, and Interface Architect took over with aplomb.

Becoming an architect requires a few prerequisites. Interface Architect 2.0 calls for an HP 700/800 Series platform with at least 8 MB of RAM; at least 15 MB available disk in a single partition; HP-UX V. 4.0

Michele Petrovsky



**FOR HP**

# Storage facility.

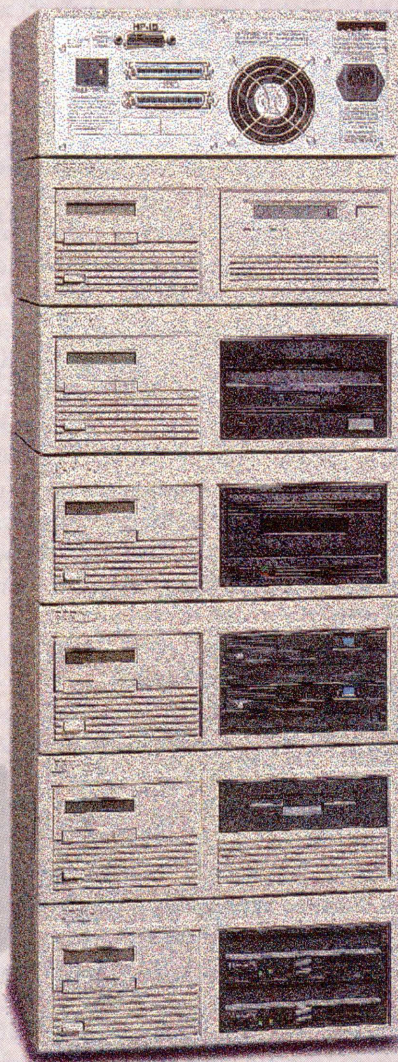
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or higher, and the X11 Release 4 Development Environment and Server.

On our HP 9000 Model 710, we needed to install only Interface Architect itself because the windowing and window management facilities, which must underlie it, were already present. A fairly straightforward load involved **mkdir**, **tar** and **make**, as well as running an install script. This script creates links to appropriate X11- and Motif-related areas of the existing file system. The only wrinkle we encountered involved keeping links straight (always a touchy process); these problems were readily resolved.

Most of what's required to build a GUI with Interface Architect is presented in the Getting Started guide's first tutorial. There, we were instructed to start X Windows, open an Xterm window, start the application in background in that window, iconify the Xterm window and move to Architect's Project Window, which then dominated our screen.

Interface Architect uses many canned, OSF/Motif Style Guide-compliant interfaces. In effect, these are templates that can be used to speed up the development of your GUI. These templates already have several Motif-familiar characteristics defined, which means that most of the window behavior also already has been defined.

## Laying The Foundation

Our work with Interface Architect began by selecting and loading one of the prototypes into the Project Window. In the prototype, we created a workspace for our drawing editor by clicking to bring up the Selected Widgets Menu, and selecting appropriate editing operations. This gave us the beginnings of our application — a window with two scrollbars.

Next, we practiced moving and resizing widgets. Then we added a push button that allowed us to change the background color of our frame, as well as one of the properties of a widget. This last step involved working with the Widget Property Editor and its subsidiary Category menu. That menu allows you to select the properties or "resources"

Interface Architect uses  
many canned, OSF/  
Motif Style Guide  
compliant interfaces.  
These are templates  
that can be used to speed  
up the development  
of your GUI.

that you wish to change for a given widget. Resources are simply the characteristics of a widget, and include core characteristics (those common to all widgets, such as width and height), specific characteristics (properties of a particular widget only — such as arrow direction), and behavioral characteristics (those attributes that define the effect a widget produces when it is used).

After changing the color of our button, we altered another of its resources. We modified the font in which the widget's message would be presented. Then we added three more push buttons, changed the appearance of those buttons, added a pull-down menu and tested what we had completed so far. We worked for only about 50 minutes, and our interface was taking shape nicely.

## Form Follows Function

Each item we included in our frame needed to have a behavior associated with it. There are two kinds of behavior: callback behavior, which specifies the effect caused by activating a frame item (e.g., pushing a button), and application window behavior, which defines how the application itself (in our case, a drawing editor which we were creating along with its own GUI) will function.

We specified the first type of behavior with the Callback Editor, a subset of the Widget Property editor. The Call-



back editor gives you the opportunity to enter your own C calls — or include C calls from the package's library — to give your widget its proper function. The second behavior was generated through the Translation Table editor and the Interface Architect built-in C interpreter. By using a combination of these two tools, we were able to specify line-drawing capability and associate that ability with a push button.

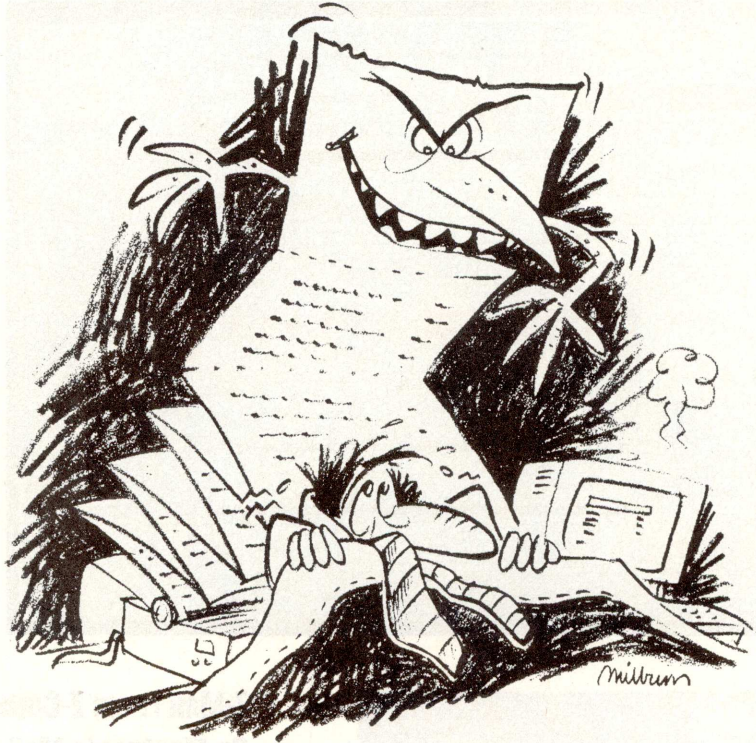
The accessibility of resource editors, and of an editor for modifying C declarations as well, is one of the things that makes Interface Architect unique among GUI builders. The resource editor allows you to modify the template, which will generate the C code that underlies your interface. Using the declarations editor gives you the opportunity to add your own new code or even merge in existing code. If you're starting to feel intimidated by all this, don't. Interface Architect guides you through the creation of screen- and application-control programming.

The translation table we built associates operations, such as button presses, with the C-coded actions to be executed when those operations are selected. After working with the Translation Table/Interpreter combo, we went on to the declarations editor to modify the C code template that we had created thus far, change the makefile that controls compilation of that code and, of course, save our work. Finally, we generated the C code that would do the work for our application.

We exited Interface Architect and ran the application and interface we built. Happily, our drawing editor operated as we designed it to — the most any architect can ask of his creations.

Interface Architect allows even those users without C coding or other application development experience to create complex GUIs or even GUI/application combinations. If your environment requires constructions like these, you'll benefit from building and implementing them with Interface Architect 2.0. ■

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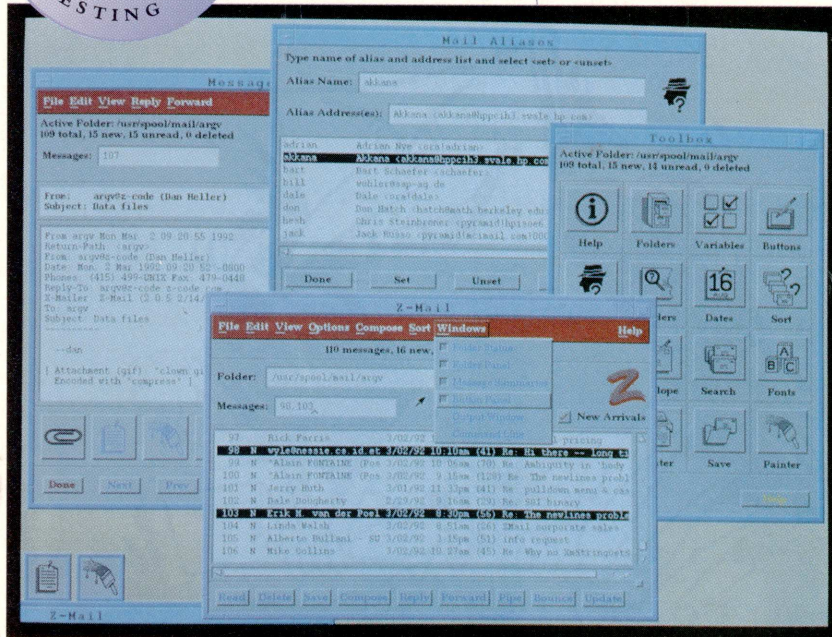
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# Z As In Z-Mail

## Z-MAIL

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- Menus logically organized.
- Documentation needs to be more clear and more thorough.

### PRICE:

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### Z-Code Software

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## Z-Mail From Z-Code Software Makes Its Mark On Electronic Mail

One of our childhood heroes was the swashbuckling crusader Zorro. His clever disguises, his Superman-like transformation from mild-mannered Don Diego to the vigilant defender of the common citizen, and, above all, his prowess with the sword delighted and amazed us. In particular, we were captivated by the panache with which he inscribed his signature message, the "Z" that stood for Zorro.

Unlike that hero of old, most electronic mail (E-mail) systems aren't known for sending their messages with flair; just the opposite is true. E-mail systems tend to be functional but unimaginative, providing the user with a means of paperless communication but little else.

A new product from Z-Code Software (San Rafael, CA) may change E-mail's image to something more nearly approaching the dash of Don Diego's alter ego. That product is Z-Mail V2.1b. Z-Mail is a mail user agent (MUA), which means that it offers mail creation and management facilities to its users, as opposed to a mail transport agent (MTA), which actually delivers the messages. (One example of an MTA would be the ubiquitous "mail" utility in UNIX.)

Z-Mail provides MUA services under Motif, with a full graphical user interface (GUI), in versions for HP 9000 systems in the 700/800 or 300/400 series.

The distribution medium for Z-Mail is a QIC-format tape. Dropping and properly configuring the contents of that tape onto your HP

Michele Petrovsky



machine is as easy as 1-2-3, with 1 being a **tar**, 2 a **cd** to the directory you've chosen to hold Z-Mail, and 3 the running of a Z-Code-provided shellscript to set up your Z-Mail system.

In our lab, however, we ran into a minor snag in this process. Neither the Series 400 nor the Series 700 machine on which we wanted to load Z-Mail was equipped with a QIC drive. In order to dump the tape, we had to execute a piped **remsh/dd/tar** command from our Sun IPC SPARCstation, which did have a QIC drive. Outside of this brief detour, however, loading and configuring Z-mail was quick, simple and straightforward.

We began our tests of the package by bringing it up with the command line:

```
zmail -gui
```

The option "gui" tells Z-Mail that you wish to operate in a full graphical-interface manner. We used this option in the start up command, because you also can run Z-Mail with three other start up options by means of a TTY interface, providing only a command line and running in character mode; a full-screen but still character interface; or the graphical, X-based interaction we employed.

Because configuring Z-Mail draws on the existing E-mail users and their addresses from the existing MTA, we were able to immediately work with the application's most inviting features. We played with Z-Mail's Main window, alternately hiding and displaying "panes," such as the mail-folder status line, mes-

sage summary area and command line. We modified several Z-Mail system variables; there are more than 100 from which to choose. Specifically, we set the parameters to the values indicated in *Table 1* by clicking on the Variables item in the Options menu of the Main window, clicking on the name of the variable in the list then produced, and filling in the text field to set the variable's value.

After setting these values, we tested the results of each. In every case, Z-Mail responded by carrying out the actions in the manner we had defined.

Next, we created a return address and set up an alias for one of our users via the Options menu. From that menu, we brought up Z-Mail's Toolbox, an iconic interface that provides direct, rather than menu-to-menu-to-menu, access to most of the application's dialog boxes. Clicking on the Envelope icon in the Toolbox brought up the appropriate dialog box and allowed us to set up a return address. We liked the Toolbox path so much that we used it to set up the alias, an address that can be substituted for another long address or multiple addresses. Then we removed that alias, selecting it from the alias list by first clicking on the alias and then clicking the Unset button at the bottom of our dialog window.

Z-Mail presents you with several paths to its Compose function, where you build messages or use pre-existing message templates. These paths include selecting Compose from the Main Window's menu bar, clicking on the Compose button in the Main Window's button panel or starting Compose from

## T A B L E

Variable	Value
History	Set to 50 to cause Z-Mail to retain only 50 rather than its default 100 commands.
Editor	Set to "ed" to cause Z-Mail to use <code>/user/bin/ed</code> rather than the default <code>vi</code> as its text editor.
UNIX	Set to off to tell Z-Mail to disallow operating system commands in the command-line box.

*Z-mail offers more than 100 variables which can be set through a text field.*

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the Toolbox. We used all three departure points to create messages, and each allowed us to begin composing quickly.

We already had used **vi** to create a few message templates and had made Z-Mail aware of them by setting the Templates variable to the directory where we had stored our boilerplate files. Then, in Compose, we were able to select and use a form by clicking on its name in the list of templates provided. We also created a message from scratch, inserting the contents of a text file into it, requesting a return receipt from the addressee and using the spell checker. These actions were executed by means of the Edit, File and Options menus of Compose.

We then used the package's search-and-replace function on a message just created; replied to and forwarded messages; sorted messages by several of the criteria Z-Mail makes available, such as date, subject, length and status from the grab bag that also includes author address and subject; found and displayed related messages; and prioritized, saved, deleted and undeleted messages. These opera-

tions were done through the Edit menu of the Main window, appropriate Toolbox icons and the Compose menu. We also used the View menu on the Main window, alternately reading a message, pinning up or centering/maximizing onscreen a given message, conducting a pattern search across messages and conducting a date-based search.

In carrying out all these tasks, we had only to follow the *Z-Mail User's Guide*. The documented instructions provided the coaching we needed.

### Master Of Disguise

As our last test of Z-Mail, we worked briefly with its scripting capability. Called Z-Script, this feature allows you to customize both Z-Mail's user interface and its lower-level, E-mail-specific functions. With it, you can transform Z-Mail's appearance and behavior to suit the needs of your environment.

We went back to the *User's Guide*, following its tutorial to create a new button called Quit in the Main window. Then we modified the Z-Script attached

to this button by entering the following:

```
ask "Do you really want to quit?"
if $status == 0
    button quit
endif
```

This script causes Z-Mail to prompt the user for confirmation when the Quit button is clicked and to carry out the Quit function if the user responds with a "Yes" (an "exit value" or "status" of 0). As had been consistently the case in all our lab work with Z-Mail, Z-Script performed as documented.

In the past, E-mail has tended to be utilitarian — until the introduction of Z-Mail V2.1 for Motif. This product not only provided us more fun than we had ever had in working with E-mail, it also proved to be efficient and to offer a wide range of E-mail-related operations. Who said that work can't be fun, too? If you'd like to put a little more pizzazz, as well as a great deal of functionality, into your interoffice, paperless communications, take a look at Z-Mail. It could make a mark on your organization's information exchange. ■

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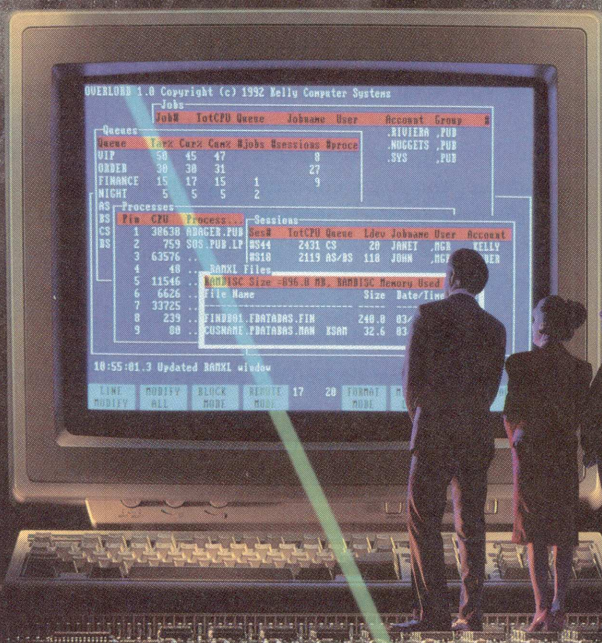
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## NETWORKING

**Tim Cahoon**

**Competitive Access Providers Offer Affordable Alternatives To Private Networks**

# Consumer Advocates

Believe it or not, new high-speed network technology, a practical networking solution, and a recent FCC ruling all have something in common. That may sound like an unlikely combination, but together they form a common bond that favors network consumers.

New networking technology is always in the limelight. Whether it's ATM, Frame Relay, Sonet, SMDS or ISDN, the virtues of the latest high-speed LAN solution are widely touted by its supporters. While vendors, consortia and user organizations try to create the standards, products and markets for these new tools, our job, as network managers, is to understand how the new technologies can serve our needs.

Al Fenn, president of MFS Datanet, which markets a high-speed LAN interconnection service, changed the way I thought about the use of new technologies and how they should be viewed by customers. Fenn pointed out that many of the new high-speed technologies are designed primarily with large, highly efficient global networks in mind.

From the standpoint of many users, Fenn says, technologies like Frame Relay and ATM are too costly to implement right now, and will continue to be expensive for the foreseeable future. In addition to new equipment, users would need new tools to monitor high-speed networks, and their support staffs would require extensive retraining. For these reasons, says Fenn, most companies will not be installing their own private high-speed networks; rather they'll rely on large public network services, which because of their size can afford high-bandwidth technologies.

If you keep up with the trade press, you've probably seen Fenn's analysis widely corroborated. Frame Relay, for example, the most commonly available of the new network technologies, is provided by public networks rather than installed by private companies.

### CAPital Expenditures

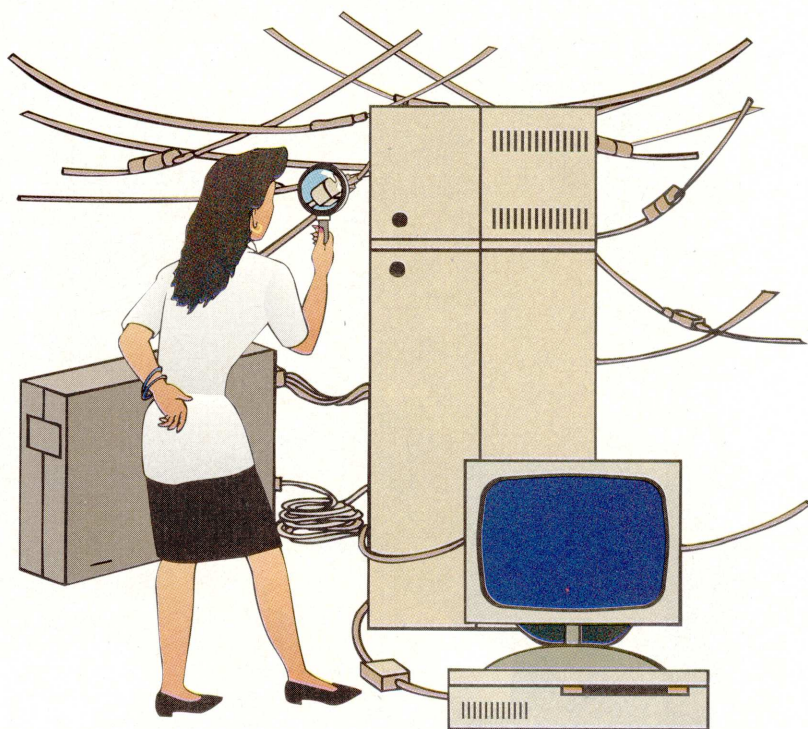
One issue confronting public carriers and telephone companies providing high-bandwidth networks is how the new services should be sold. Current network costs are based on set amounts of bandwidth. Ethernet's bandwidth is 10 megabits per second (Mbps). Token Ring's is either four or 16 Mbps, and FDDI is 100 Mbps. You buy what you feel you need, install it and you've got it.

If you want to buy bandwidth from a carrier in a single large pipe, your choices are a 56k line, a T1 line (1.5 Mbps), or a T3 line (45 Mbps). For a truly

transparent connection, T1 is too small and T3 is too big and expensive.

The problem is how to sell services and bandwidth on an as needed basis. MFS Communications Company Inc. (MFSCC), the parent of Metropolitan Fibers Systems Inc. (MFS), provides a solution through its several operating subsidiaries. MFS is the nation's largest Competitive Access Provider (CAP). It offers customers private line and special access digital communications services across a fiber optic network. MFS installs and operates a fiber optic network that consists of 1,000 route miles and more than 58,000 miles of fiber. MFS has fiber backbones in 14 of the nation's largest metropolitan areas.

MFS Datanet is a recently established subsidiary that develops and markets advanced data communications services. In short, it offers the first commercially available high-speed LAN interconnec-





tion (HLI) service in the U.S. The HLI service uses the fiber networks installed by MFS and has announced plans to link them. This new service provides a customer with up to a 100-Mbps link to his networks, connected not only to the local fiber system, but also with any of the customer's networks across the country.

Even better, MFS Datanet sells its bandwidth services in increments based on today's available technology. If you have several Ethernets to interconnect, for example, you purchase only 10 Mbps. If you have FDDI, you purchase 100 Mbps. You don't have to worry about T1s or T3s to link your networks because MFS Datanet does it for you. Connection to the MFS network is as simple as connecting a new device. Whether you use MFS Datanet as a metropolitan area network (MAN) or a wide area network (WAN), it is completely transparent. It's like bridging to a separate network segment within your facility.

Built using ATM technology, this new service is an example of the public network implementation strategy described by Fenn. CAPs defray the cost of new equipment, lines, tools and training across their customer base, which makes new technology more affordable for everyone — and consequently, more widely adopted. Customers benefit by not having to buy equipment or retrain support staff. And the whole new paradigm of high-speed, bandwidth-on-demand networking is made possible.

### **Saved By The Bells**

In order to make these new network options available to all their potential users, public network carriers require access to local Bell networks. Recently, the FCC ruled in favor of the Metropolitan Fiber Systems Local Equal Access Initiative. The initiative was designed to allow CAPs to interconnect to the local Bell telephone networks. It also gives CAPs the right to locate equipment inside the local Bell central offices. Now, by paying reasonable fees to the local telephone companies, CAPs can connect equipment

## **CAPs defray the cost of new equipment, lines, tools and training across their customer base.**

directly to the wires coming into the Bells' central offices from customer locations.

Prior to this ruling, CAPs had to run their own cables from their facilities to customer sites. This was very expensive, and the current infrastructure gave the Regional Bell Holding Company (RBHC) a virtual monopoly. This new ruling helps break the local monopoly. Communications experts compare it in importance to the ruling that broke up

AT&T and spawned long distance carrier competition.

For CAPs like Metropolitan Fiber Systems, the ruling opens new markets and may bring in many new customers. The combined U.S. local access markets are worth \$25 billion annually, so expect to see increased competition in the future.

But don't feel sorry for your RBHC. Fenn says the typical RBHC generates \$10 to \$11 billion in annual revenue and reaps \$1 to \$1.2 billion in profits (10 percent). Compare this to the average aerospace company which generates about \$15 billion in revenue but only \$5 million in profit (3 percent). And besides, competition will help consumers by motivating CAPs to offer a wider range of new products and services.

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### **[ STILL GOING: X.25 UPDATE ]**

Despite the increasing popularity of Frame Relay, ATM and other high-speed technologies, many HP users and public data carriers still rely on slower, but less expensive, X.25 technology. In effort to make it easier for HP 3000 and HP 9000 business systems to connect with X.25 networks, HP recently announced the availability of a multiprotocol X.25 switch.

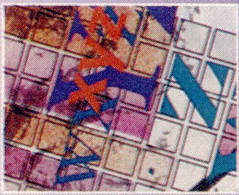
The HP Model 45 Plus, which evolved from the standard HP Model 45, is a fully-functional X.25 switching node and multiprotocol Packet Assembler-Disassembler (PAD). By concentrating multiple network protocols, including SNA, asynchronous and X.25 traffic, on a single X.25 line, the Model 45 Plus reduces overall network line usage and saves users money on datacom line charges.

The Model 45 Plus can operate as a standalone intermediary system or can be interconnected with other Model 45s to

form a small network. Users can configure, monitor and control the Model 45 Plus either locally or remotely from a terminal or PC. Also, the Model 45 Plus can be managed via the HP OpenView Switch/PAD Manager, which allows users to manage HP DTCs, hubs, bridges, systems and HP 2335A PADs from within the same network management platform.

Christian Roy, general manager of HP's Grenoble Networks Division, says, "The HP Model 45 Plus offers high performance through multiprotocol links up to 1.5 Mbps (T1 speed), and throughput up to 2,500 packets per second on up to 30 ports." Also, Roy notes, the new switch provides increased flexibility with packet sizes that can be configured up to 1,024 bytes, as well as increased security and availability with a mean-time-between-failures of more than 35 years.





## UNIX

Miles B. Kehoe

### HP-UX Link Command Lets You Avoid Typing Long Directory And File Names

# File When Ready

The core of most modern operating systems is the file

system, which allows you to create, edit and store ASCII files, binary programs and data. HP-UX is no exception.

At the lowest level, HP-UX allows three kinds of files: regular files, which contain ASCII or binary data or programs; directories, which contain information on other files; and special files, which represent a physical I/O device such as a disk drive, printer, or even a terminal. Files occupy space on the disk, and the sections of disk it occupies are called inodes (i-nodes).

Inside HP-UX, the system maintains information about each file. This information includes the location of the inodes that make up the file; the size of each file; the user name who owns the file and the access permissions associated with the file; and the time and date of creation and modification. The system also tracks the number of links associated with each file.

Notice that one element not stored is any kind of file name. Internally, the inode number is how HP-UX refers to a file, directory or device. Because most of us can remember names better than inode numbers, HP-UX superimposes a naming scheme on top of the low-level file system that enables us to give names to our files.

## Master Link

Because the filename is independent from the actual information the system maintains, you can assign two or more different names to any file. This may sound strange, but it's actually a handy feature.

For instance, suppose several people

in your workgroup need access to the group objectives file. If the file is initially created in your manager's home directory, its name, or link, might be `/bermuda/users/devel/joe/workdir/group.objectives`.

Each user could, of course, specify the full filename every time he wanted to view the file. But by using the capability of HP-UX and the link, or **ln**, command, each user can create a link to the group file in his home directory. The syntax used to create a link to the group objectives file in your own directory is:

```
ln /bermuda/users/devel/joe/workdir/
group.objectives mycopy
```

This creates a file entry link in your home directory that points to the data associated with the original file. Whenever your manager edits the file, the changes also will appear to have been made to your file mycopy.

In addition, each link that points to a file, increments the link count mentioned earlier by one. If a file has several links pointing to it, the actual inodes that contain the file are not marked as free until every link pointing to the inode has been removed.

## Hard And Soft Links

Two types of links exist under HP-UX: hard links and soft links. Hard links work as I described above and require that the file or directory you're linking to exists on the same drive or partition as the link. A soft link allows you to create a link to a file or directory on a different drive or partition than the link file. In fact, with

a soft link, a link can exist to files or directories that don't exist. When they are created, the links will be meaningful.

To understand hard versus soft links, consider the following. In your home directory, create a file called file1. Create a hard link and a soft link by entering:

```
ln file1 file2
ln -s file1 file3
```

List the directory using **ls -li** to show the inodes; notice that file1 and file2 both point to the same inode. The file3 points to a different inode, and is logically pointing to the file named file1.

Now edit file2 and save your changes. Look at file1 and you should see the changes you have made; the same changes should appear when you view file3. Now remove file1. The file2 still exists, and when viewed shows the same contents. However, if you try to view file3, HP-UX will report that file3 does not exist. What it is really saying is that file1, to which file3 is linked, does not exist.

If you then go back and create a file1, viewing file3 will be a way of looking at file1. By using **ln**, it's possible to link directories as well. For example, to include a link to your manager's working directory into your directory, you could use the command:

```
ln /bermuda/users/devel/joe/workdir
mydir
```

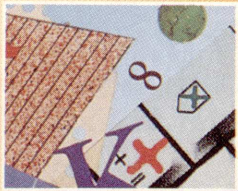
Then, when you change to your directory mydir, you will see all the files from your manager's work directory that you have system permission to view. Note that the **ln** command has no real effect on permissions.

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## MANAGING YOUR 3000

John P. Burke

PA-RISC Lives Up To Its Reputation In Nuts And Bolts Performance Tests

# A Look Under The Hood

"Can this really be the powerful multiuser computer I've

been hearing about? I mean, it's not much bigger than some PCs!"

That was my initial reaction when I saw the HP 3000 917LX in *HP Professional's* DP Labs. The arrival of the Nova box gave me my first hands-on experience with a PA-RISC machine. The new machine has forever ruined my relationship with the venerable old Classic 3000.

If you haven't yet upgraded to an MPE/iX machine, you may want to seriously consider the performance advantages you're missing.

## Faster Than A Speeding Bullet

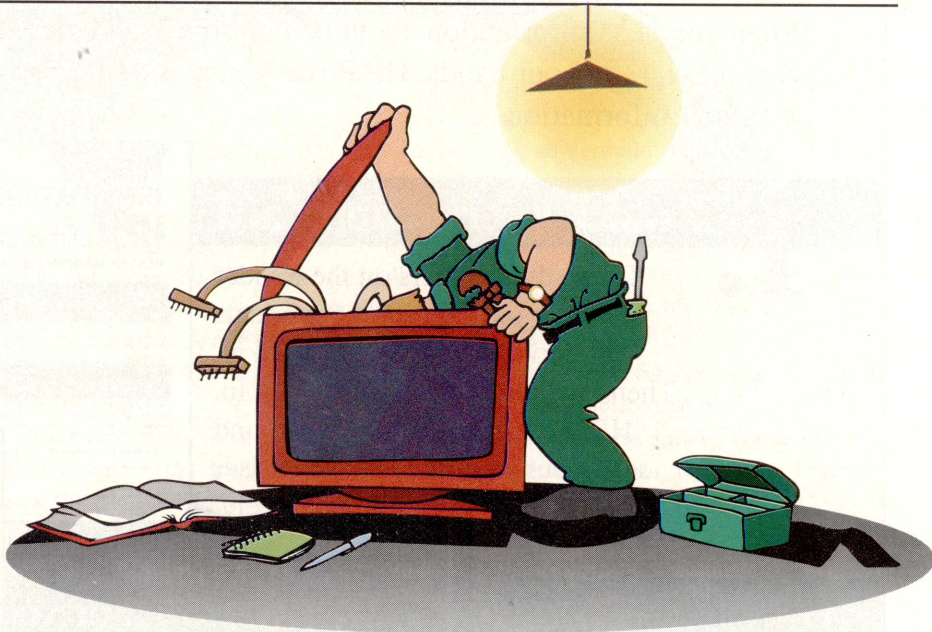
How fast is MPE/iX on PA-RISC? Very. Consider a couple of tests:

■ Compile an 11,000+ line SPL program. On my Classic 58, this requires 81 CPU seconds. On the 917LX (and remember, the SPL compiler is operating in Compatibility Mode), the compile takes only 20 CPU seconds.

■ Compile and PREP two 10,000+ line SPL programs. On the Series 58, the entire process takes 224 CPU seconds. On the 917LX, 49.

For amusement, I ran OCTCOMP (the object code translator) on the SPL compiler and reduced the times to 11 and 29 CPU seconds, respectively — an 8-to-1 performance improvement. And the 917LX is at the bottom of the PA-RISC HP 3000 line! Imagine what a Corporate Business System could do.

I wonder if HP hasn't been too cautious in promoting Compatibility Mode for MPE/iX? It turns out to be much more compatible — and much faster — than I expected.



As a test of Compatibility Mode, I used some complex programs written in SPL, which of course is not supported in Native Mode under MPE/iX. The migration toolset identified several "potential" problem areas even in Compatibility Mode, so I wasn't sure what to expect. This was not an exhaustive test, mind you, but the only problem I encountered was a naming conflict (where a UDC name was the same as a new MPE/iX command).

Despite the significant compatibility between the two platforms, however, the MPE/iX file system is different from that of MPE V. Caching is gone; mapped files have arrived.

## I/O, I/O It's Off To Disk I Go

You may wonder whether MR NOBUF I/O still gives the performance boost it did on Classic systems — it does, at least in Compatibility Mode. As a test, I took a file containing 39169 126-byte records (blocked 32 per block) and ran a program that tests various I/O schemes (in a fu-

ture column, I'll examine Native Mode I/O performance):

Sys	CPU	Wall	Description
58	14.6	29.0	MR NOBUF I/O
58	69.7	115.2	FREADDIR serial I/O
58	72.7	127.8	FREAD serial I/O
917	1.8	2.4	MR NOBUF I/O
917	9.9	12.6	FREADDIR serial I/O
917	10.6	12.7	FREAD serial I/O

I can't leave I/O without mentioning the new COPY command. Using the same file as above and comparing with FCOPY (still in CM):

FCOPY	28.2 CPU seconds
COPY	2.1 CPU seconds

And, COPY works while in BREAK!

## Command Performance

With MPE/iX, CI programming is no longer an oxymoron. Unlike MPE V, MPE/iX offers a rich programming language. Need proof? Check out MKACCT.PUB.SYS. This MPE command



file leads you (complete with screen enhancements) through the creation or modification of the USER/GROUP/AC-COUNT structure. And, it will leave an audit trail.

Every "list" command has been improved and one or two have been added. LISTUSER, LISTGROUP and LISTACCT now give you a display similar to MPE V's LISTDIR5 program. LISTF has six new options and there is a whole new LISTFILE command.

JCWs were an extremely useful, yet limited feature of Classic MPE. They could be used to hold only a 16-bit integer. In MPE/iX, the concept has been extended to encompass character strings as well.

Additionally, there is a new command (INPUT) available for CI programming that implements interactive prompting for variables. One thing that always annoyed me about Classic JCWs was that once created, they could not be deleted. In MPE/iX, we have DELETEVAR. (Thank you, HP.) Classic MPE also had several system-reserved JCWs, primarily

**MPE/iX, thankfully,  
has a "PRINT" command.  
It's everything you always  
wished for and more.**

for date and time. MPE/iX has many more variables (type SHOWVAR @ for 1 1/2 pages).

With all the extensions to the CI available in MPE/iX, you may never have to write another stupid, little utility program again.

Another of my personal pet peeves with Classic MPE was its lack of a command that would quickly and easily display some or all of a file. You had to use a text editor, FCOPY or some other program. Even lowly MS-DOS has the "TYPE" command. MPE/iX, thankfully, has "PRINT." It's everything you always

wished for and more. It works while in BREAK, too.

### **Oops!**

The MPE/iX command interpreter (CI) is just another Native Mode (NM) program: CI.PUB.SYS. This creates all kinds of interesting possibilities. Of course, programs usually have a command to terminate gracefully. CI is no exception; it uses "EXIT." So far, so good. Now suppose you were to type in "EXIT" at the regular MPE colon prompt ... uh, oh. You can kiss your session goodbye!

And, unfortunately, even in MPE/iX there's still no supported way short of a SHUTDOWN and RESTART to reset the clock or reset spoolfile numbers.

The 917LX in *HP Professional's* lab is currently on MPE XL release 3.1. We hope to install MPE/iX 4.5 (the first true POSIX release) soon. For now, I think I'll go back to my office and kick the old 58. It's just never going to be the same.

Would you like to continue to see articles on this topic?  
Circle on reader card  
yes 350 no 349

## **[THEY'RE GIVING IT AWAY!]**

At the New Orleans INTEREX Conference this past August, Bradmark Technologies announced that it would make its entry-level product, SUPERDEX Level 1, available to all TurboIMAGE users at minimal cost. The company now says that it will continue this unusual offer indefinitely.

Under the terms of the offer, current TurboIMAGE users, whether they are using Classic MPE V or PA-RISC-based MPE/iX machines, may obtain SUPERDEX Level 1 for a processing fee of \$135 per CPU. The software itself is free: The processing fee covers the software tape, one manual, and shipping and handling. You can also purchase SUPERDEX support at up to 80 percent off Bradmark's regular prices. Regardless of CPU, new users can buy one year of maintenance and support for \$300.

According to Brad Tashenberg, president and CEO of Bradmark, the company decided to extend the SUPERDEX offer in honor of HP's decision to integrate a third-party indexing (TPI) interface into TurboIMAGE 4.0. "We wanted IMAGE users to realize the full benefits of indexing," said Tashenberg. "HP provided the TPI interface as part of its standard upgrade release, now we're providing the indexing tools at almost no cost to the user."

The TPI interface for TurboIMAGE makes possible generic, partial, keyword and, in some cases, relational access to IMAGE databases. However, a third-party indexing product, such as

Bradmark's SUPERDEX or Dynamic Information Systems Corporation's (DISC) OMNIDEX product, is required to take advantage of the new interface. SUPERDEX Level 1 provides support for generic and partial key lookups.

According to Tashenberg, HP did not make clear when it announced the TPI interface for TurboIMAGE that users would have to buy separate third-party products to achieve the performance benefits of indexing. "A lot of people assumed that indexing functionality, including generic and partial key lookups, were simply being rolled into IMAGE," Tashenberg said. "This is not the case." For this reason, Tashenberg added, his company decided to distribute its SUPERDEX Level 1 product virtually free of charge.

What's in it for Bradmark? First and foremost, says Tashenberg, the free software offer is an excellent way to introduce new users to indexing. "Surprisingly few HP 3000 TurboIMAGE sites take advantage of indexing," he notes, "Our estimates are that of the more than 45,000 HP 3000 sites, only 3,000 to 5,000 are using indexing products right now." In addition to expanding its indexing market share, Bradmark hopes to cultivate a loyal following for its other products as well.

For more information, contact Bradmark Technologies, 4265 San Felipe, Suite 800, Houston, TX 77027 or call 1-800-ASK-BRAD.



## WRQ Offers Reflection X PC X Server

Walker Richer & Quinn (WRQ) announced an addition to its Reflection product line.

Reflection X, a new PC X server that runs under Microsoft Windows, provides a solution for PC users who need to gain access to X-based information resources and database applications, and it provides IS managers with a way to maintain mission-critical host systems while establishing a migration path to open systems. Reflection X will run with WRQ's TCP Connection, providing an efficient link between the PC and X applications running on various hosts. Reflection X also will support a variety of other transports.

Contact Walker Richer & Quinn Inc., 2815 Eastlake Avenue East, Seattle, WA 98102; (206) 324-0350.

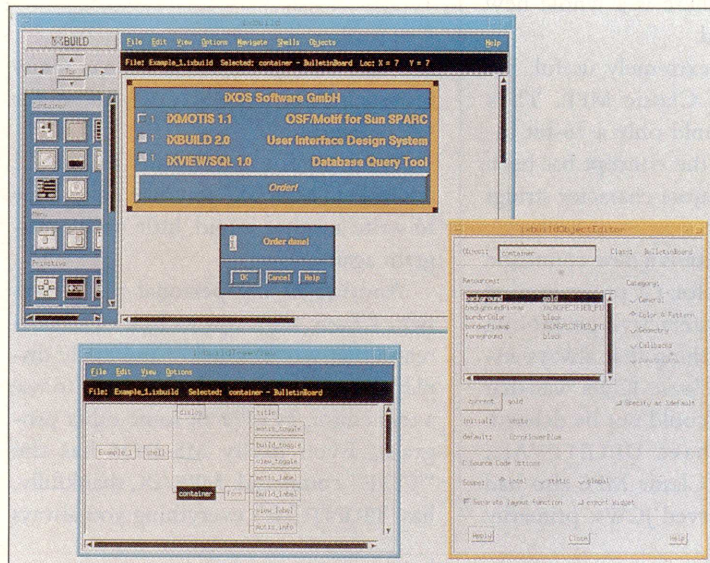
**Circle 400 on reader card**

## The Workstation Group Presents uni-SPF Version 1.1

The Workstation Group announced Version 1.1 of its uni-SPF UNIX editor, a UNIX implementation of IBM's mainframe editor, ISPF.

Version 1.1 of uni-SPF offers new Dialog Management Services features, including services to aid compiled-language applications. The ISPLINK service allows applications written in languages such as COBOL or FORTRAN to invoke uni-SPF services and share variables with uni-SPF dialogs. The new version adds expanded variable features, including VDEFINE, VDELETE, VERASE, VREPLACE and VRESET. Version 1.1 has expanded panel definition capabilities such as complete ATTR section support and extended panel logic support. Enhancements in the Edit and Browse area include the ability to handle larger files, faster file access and extensions to keyboard mapping capabilities.

Version 1.1 of uni-SPF runs on HP 9000,



*iXOS' iXBUILD is a software tool for building OSF/MOTIF-based GUIs.*

Sun-3, Sun-4, SPARCstations, RS/6000 and DECstations. A single-user license costs \$399. Contact The Workstation Group, 6300 N. River Rd., Rosemont, IL 60018; (708) 696-4800.

**Circle 399 on reader card**

## iXOS Introduces iXBUILD 2.0 OSF/Motif GUI Builder

iXOS announced release 2.0 of iXBUILD, a software tool for creating OSF/Motif-based graphical user interfaces for applications software.

Release 2.0 of iXBUILD lets you build, prototype and test interfaces based on the Motif standard. iXBUILD 2.0 includes new editors, an improved interface with more graphical feedback and an on-line HELP system for OSF/Motif. iXBUILD 2.0 incorporates a full set of Motif widgets and editing tools.

A new, interactive Treeview Editor lets you graphically display the hierarchical logical structure of any code under development and enables you to make changes to the structure. Elements both on and off the screen can be earmarked for individual or global changes,

and you can "drill down" into any element to make detailed changes by clicking on an icon. The new Search Editor enables you to locate and make global changes to widgets sharing specific common attributes such as color and font size. You can test your work at any point by invoking a test mode that lets you create and interact with the interface or demonstrate it to users.

iXBUILD 2.0 is available on HP 9000/700/800 (HP/UX 8.07 and above), SPARCstation/Server (SunOS Version 4.1.1 and Solaris 2.0 and above) and DECstation (running ULTRIX V4.0 and above). Cost is \$4,500.

Contact UniPress Software Inc. (U.S. distributors of iXBUILD), 2025 Lincoln Hwy., Edison, NJ 08817; (908) 287-2100.

**Circle 395 on reader card**

## WordPerfect Office 3.1 Ports To HP 9000

WordPerfect announced WordPerfect Office 3.1 for UNIX on the HP 9000 Models 700 and 800.

WordPerfect Office 3.1 for UNIX is an



office automation package that includes E-mail, calendar and scheduling programs. WordPerfect Office 3.1 for UNIX on HP-UX lets you communicate with WordPerfect Office users for DOS, Windows, Macintosh, Data General, VAX/VMS and other UNIX platforms.

Contact WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84057; (801) 225-5000.

**Circle 398 on reader card**

### **HI-COMP Offers HI/SPLIT For UNIX Version Of HIBACK**

HI-COMP introduced HI/SPLIT, a new feature for its UNIX version of the HIBACK software.

HI/SPLIT allows up to four similar backup devices to be accessed in parallel. HIBACK separates the backup by complete file and then sends files to each of the backup devices on the basis of size, which results in an equal amount of information on each device. Because the files remain intact, you can restore from any single piece of media on a single device. Single-file restore is also possible. This feature, coupled with HIBACK's FAST SEARCH feature for DAT, allows fast restore without the need to reconstruct the entire database or tie up several storage devices.

Contact HI-COMP America Inc., 419 Canyon Ave., Ste. 215, Fort Collins, CO 80521; (303) 224-9700.

**Circle 397 on reader card**

### **Metrica Version 3.1 Offers Performance Improvements**

Leading Technology announced Metrica Version 3.1, featuring enhancements to several components of Metrica's integrated data management system.

Metrica is a data management, analysis and visualization tool designed with specific features for scientific and engineering applications. Database server enhancements include increases in all database storage

capacity parameters. With version 3.1, the number of elements that can be stored in a data array, the maximum individual record size, the number of variables per data table and the number of tables per database have been increased.

For users developing custom applications with Metrica 3.1, the new release includes enhancements to Metrica's Technical Scripting Language (TSL) and programmatic interfaces. Extended TSL functionality lets you query databases, show the results graphically, and position or change the properties of graphs from within your customized TSL scripts.

Metrica 3.1 is available on HP, DEC, IBM, Silicon Graphics and Sun workstations. Pricing starts at \$4,875 per seat for a four-user system.

Contact Leading Technology Inc., 6 New England Executive Park, Ste. 400, Burlington, MA 01803; (617) 229-8686.

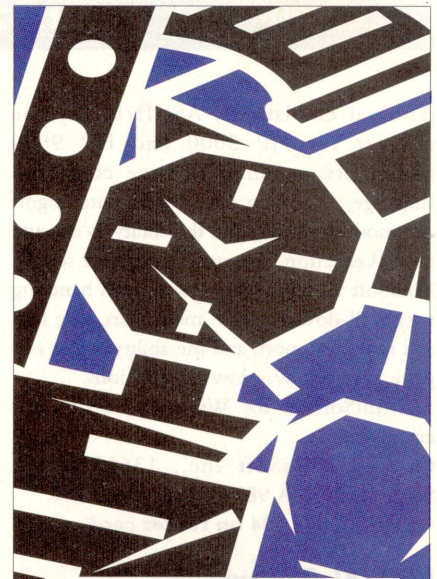
**Circle 396 on reader card**

### **MiniSoft 92 For Windows Enables Terminal Emulation**

MiniSoft announced MiniSoft 92 for Windows terminal emulator, which supports Novell's Open Datalink Interface (ODI) networking specification.

MiniSoft 92 for Windows uses Novell's ODI drivers and standard IPXODI. As an ODI-compliant HP terminal emulator, MiniSoft 92 for Windows does not require the use of the NDIS networking specification. Additional PC software is not required to make Ethernet connections to an HP host computer. MiniSoft 92 comes with NS and TELNET virtual protocols and its own TCP/IP stack, allowing connections to HP host computers across a variety of industry-standard local- and wide-area-networks.

MiniSoft 92 for Windows features HP 2392, HP 700/92, HP ANSI and VT100



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terminal emulations; ASCII/binary file transfer for HP 3000 and HP 9000 computers; a comprehensive command language, including auto login, auto logoff and modem dialing; plus the ability to execute most Reflection Command Language scripts. MiniSoft 92 offers Windows screen handling with pull-down menus, menu bars, side bars and mouse support, and the ability to cut and paste between Windows applications.

MiniSoft 92 for Windows version 2.0 costs \$159.

Contact MiniSoft Inc., 13617 SR 9, Snohomish, WA 98290; (800) 682-0200.

**Circle 394 on reader card**

## RECITAL 7.2 Available On HP 3000/900 Under MPE XL

Recital announced RECITAL 7.2 on HP 3000/900 Series computers running MPE XL 3.1 and above.

RECITAL 7.2 offers enhanced database management capabilities for application developers and added features such as the Executive Information Center, which

provides GUI-like menu-driven operations using multiple windows, pop-ups, pull-downs, check boxes, dialog boxes, scroll bar and radio button interfaces from standard, character-mode terminals. RECITAL is a fourth-generation application development environment with a built-in relational database management system. Its client-server architecture enables information management across both homogeneous and heterogeneous networked environments.

Using RECITAL 7.2, MPE XL users can develop new applications with RECITAL's tools, migrate existing xBase applications from PCs and access legacy data existing on HP TurboIMAGE databases through RECITAL's IMAGEserver gateway.

Contact Recital Corp., 85 Constitution Ln., Danvers, MA 01923; (508) 750-1066.

**Circle 390 on reader card**

## OOATool Offers Multiplatform Portability

Object International announced multiplatform portability on OOATool, available on

Sun UNIX, HP-UX, Windows, Macintosh and OS/2.

OOATool users can move their OOA and OOD results from a UNIX workstation to Macintosh, Windows or OS/2 and back again, enabling users to write part of their OOA or OOD work to a disk and continue work on the Macintosh, PC or notebook.

Contact Object International Inc., 8140 N. MoPac Expwy., 4-200, Austin, TX 78759; (512) 795-0202.

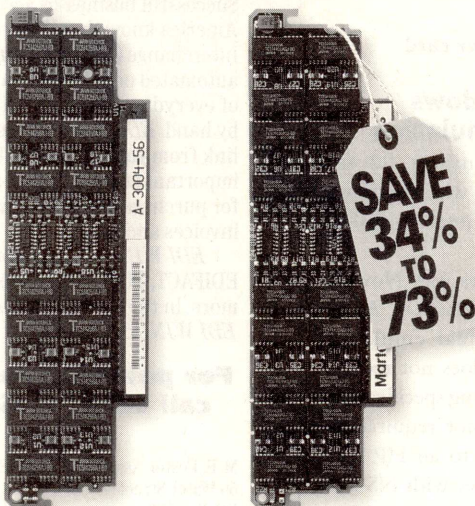
**Circle 388 on reader card**

## Island Write, Draw & Paint Version 4.0 Announced

Island Graphics introduced Island Write, Draw & Paint Version 4.0, featuring new WYSIWYG IslandTable and IslandEquation modules.

IslandTable lets you create full-color tables, incorporating text and graphics, which can be incorporated into IslandWrite documents. IslandTable gives you complete control over how a table looks and over its text, numerical and graphical contents. The

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module imports Lotus 1-2-3 .WK1 and .WK3 spreadsheets, as well as ASCII text.

IslandEquation lets you create multiline mathematical expressions consisting of mathematical symbols and text. Equations can be created with the mouse or command-line

interface and are edited in a WYSIWYG format with a range of fonts.

Each module in Island Write, Draw & Paint Version 4.0 offers enhanced user interface controls and supports the addition of PostScript Type 1 fonts. IslandWrite now

offers a thesaurus, keyboard macros and anchored containers, and imports troff and Microsoft Word RTF text.

Island Write, Draw & Paint 4.0 is priced at \$995. IslandWrite is available separately for \$695.

Contact Island Graphics Corp., 4000 Civic Center Dr., San Rafael, CA 94903; (415) 491-1000.

**Circle 393 on reader card**

### Micro Focus Supports HP's SoftBench CASE Strategy

Micro Focus announced support for HP's SoftBench CASE solution. Version 3.0 of Micro Focus' COBOL tools for the UNIX operating system will be encapsulated into SoftBench for a seamless CASE solution. These tools include Micro Focus COBOL version 3.0 for UNIX, Micro Focus Toolbox version 3.0 for UNIX, Micro Focus Operating System Extensions (OSX) version 3.0 for UNIX, and Micro Focus Dialog System version 1.1 for UNIX.

The SoftBench framework is a CASE tool-integration environment providing a common interface to, and communication between, a variety of programming tools. The SoftBench environment is based on the UNIX operating system and supports X Window System version 1.1, the OSF/Motif user interface and OpenWindows 2.0.

Contact Micro Focus Inc., 2465 E. Bayshore Rd., Palo Alto, CA 94303; (415) 856-4161.

**Circle 392 on reader card**

### SEJUS ThermalPrinter Fits Into 5 1/4-Inch Drive Bay

Workstation Source announced the SEJUS 5 1/4-inch ThermalPrinter for HP workstations. The SEJUS printer is designed to fit a standard, 5 1/4-inch half-height drive bay.

The SEJUS ThermalPrinter can be built into the HP R-Series or the Model 362/382 or R/362/382 T & M Controllers. The print mechanism is housed in a drawer that slides in and out of the drive bay as needed. In the print position, the print drawer extends approximately 7 inches from the system. When the printer is not in use, the drawer recesses fully into the system. The printer is Epson-compatible and features a 9-pin serial connector and a standard disk power connector.

Print speed is 37 cps standard and 50 cps condensed, and the baud rate is switch-selectable between 75 and 4,800 bps. The

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4.4-inch paper is on a continuous roll of approximately 38 feet and gives approximately 2,800 lines at six lines per inch.

Contact Workstation Source, 16 Auckland Close, Maidenhead, Berkshire SL6 8QB; (0628) 75252.

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### **Exabyte Offers The EXB-8505 Half-Height Tape Subsystem**

Exabyte introduced the EXB-8505 8mm half-high cartridge tape subsystem. The EXB-8505 is a SCSI-2 device that is read/write compatible with the Exabyte family of 8mm products.

The EXB-8505 features a half-high design, a native storage capacity of 5 GB, and a transfer rate of 500 KBps. It features a mean-time-between-failure rate of 80,000 hours. The EXB-8505 is a 5 1/4-inch tape drive that uses the Improved Data Recording Capability (IDRC) data compression algorithm. The IDRC data compression algorithm increases the EXB-8505's 5-GB native capacity by an average of two times,

according to the company, which typically provides 10 GB of storage capacity on a single 8mm data cartridge.

Contact Exabyte Corp., 1685 38th St., Boulder, CO 80301; (303) 442-4333.

**Circle 389 on reader card**

### **Mentalix Presents Image Management Software**

Mentalix announced Pixel!FX version 2.0, a family of image management software products for UNIX systems.

Pixel!FX 2.0 combines several products that enable scanning, viewing, manipulation and printing of line art, greyscale and true-color images. An additional product also enables Optical Character Recognition (OCR).

Version 2.0 modularizes Pixel!FX features into five products: Pixel!SCAN, Pixel!VIEW, Pixel!EDIT, Pixel!OCR and Pixel!PRINT, which may be purchased collectively as Pixel!FX 2.0 or separately as standalone imaging applications. Additional product enhancements include an upgraded Motif-

based point-and-click user interface, additional photo retouching and image manipulation functionality, and added support for all major import and export file formats.

Pixel!FX 2.0 is priced at \$1,595.

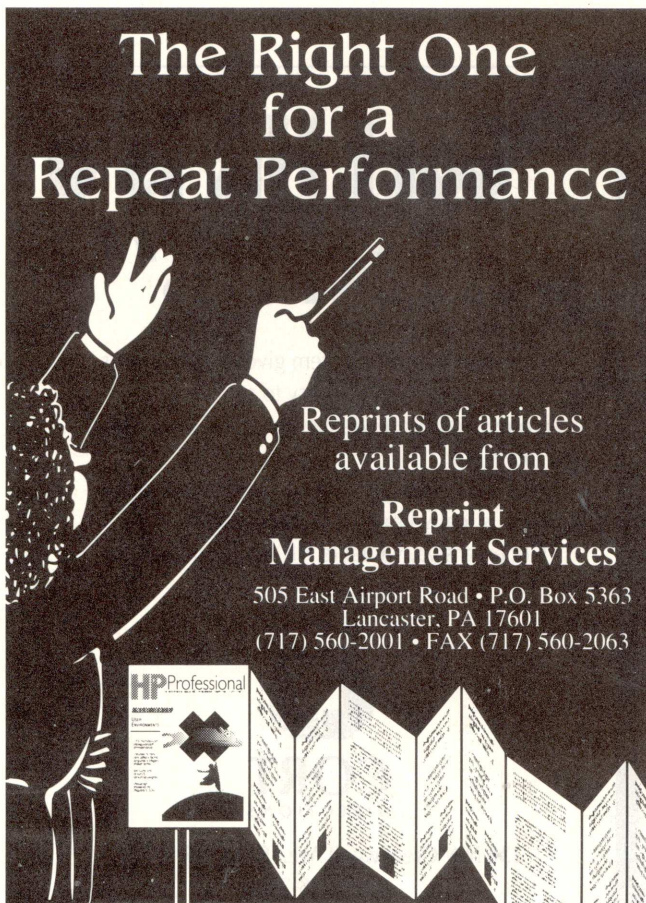
Contact Mentalix Inc., 1700 Alma Dr., Ste. 110, Plano, TX 75075; (214) 423-9377.

**Circle 387 on reader card**

### **PCL/PostScript Language Switching With BridgePort**

Extended Systems released the BridgePort ESI-2679C, which connects PCs, workstations and Macintoshes to a variety of PostScript printers.

The BridgePort enables switching between PCL and PostScript languages on Lexmark, Apple and HP printers. The BridgePort connects through parallel (Centronix), ExtendedLink (serial or parallel RJ45 input) and AppleTalk ports. When used in conjunction with the BridgePort, the following printers can be switched automatically between PCL and PostScript printer languages: HP LaserJet III, IIID or



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IIP with the HP PostScript Cartridge Plus; HP LaserJet IID, IIP, III or IIID with the PacificPage PE Cartridge; HP LaserJet IIISi with the HP PostScript option; HP LaserJet II with the Adobe Cartridge; Lexmark 4029 with the PostScript option; and Apple LaserWriter IIf and IIg printers.

The BridgePort's transparent language-switching algorithm automatically senses whether print jobs are PCL or PostScript and configures the printer "on the fly" to the appropriate language.

The BridgePort ESI-2679C costs \$595. Contact Extended Systems, 6123 N. Meeker Ave., Boise, ID 83704; (208) 322-7575.

**Circle 385 on reader card**

## MTS Offers Fax Application Development Tool

Message Transport Systems (MTS) announced FaxToolsLIB for the HP 3000.

FaxToolsLIB is a tool to add fax capabilities to your applications. FaxToolsLIB provides function and procedure calls that allow you to develop and test software

applications using fax as output. By using FaxToolsLIB directly from your application, you can completely control what goes into your fax message, or you can create a file that contains your message and then have your application direct how the fax is sent. FaxToolsLIB will return the fax status to you after the fax command is sent. FaxToolsLIB is callable from all standard languages and most fourth-generation languages that are available on the HP 3000. FaxToolsLIB is compatible with MTS FaxMate products.

Contact Message Transport Systems, 1787 E. Fort Union Blvd., Ste. 107, Salt Lake City, UT 84121; (801) 943-9934.

**Circle 384 on reader card**

## statit 3.0 Offers HP 9000 Statistics And Graphics

Statware announced statit 3.0, an upgrade of its statistical and graphical data analysis system for HP 9000 computers.

Release 3.0 incorporates enhancements such as a menu interface that offers point-and-click or command-line input, context

sensitive help and expandability. Other highlights include user-designed data entry forms, tabular reporting, contour plots, design of experiments, fitting autoregressive vector models, additional nonparametric tests and new contingency table statistics. For quality control, statit 3.0 includes exponentially weighted moving average charts, cumulative sum based on the *u* chart, and options to handle problems of assignable cause.

Pricing for statit's Base System, providing descriptive statistics, data management capabilities and high-resolution graphics, begins at \$695.

Contact Statware Inc., 260 SW Madison Ave., Corvallis, OR 97333; (503) 753-5382.

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## Holland House Announces New Module For UNISPOOL

Holland House introduced UNISPOOL/NETPRINT, a new module for the UNISPOOL multiplatform network spoolfile management system.

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Chestnut Data Systems provides three system software packages for HP 3000 minicomputer systems. CDS/SeeRevei, a security audit control system. Conveniently review security and require users to regularly change passwords. CDS/Scan, an online report display and archival system. View reports online, reduce printing and distribution costs and archive critical information to DAT or optical disk. CDS/ACORN, a batch scheduling and control system. Let users schedule and control their own production runs. *Call (609) 662-1611, FAX (609) 662-3688 or circle 102.*

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spoolfiles on a printer connected to your PC without interrupting your current task. You can also redirect to a host the output destined for each of the printer ports on your PC. From any host on which UNISPOOL/NETPRINT is resident, you can address printers that are attached to your host LAN via a TCP-IP-based LAN interface card, such as JetDirect. UNISPOOL/NETPRINT also provides a method of printing to Ethernet printer servers and DTCs.

UNISPOOL/NETPRINT is available for MPE V, MPE XL, HP-UX, Domain, AIX, Ultrix and SCO UNIX. Module prices start at \$1,000 on MPE systems and at \$250 on UNIX systems.

Contact Holland House Inc., P.O. Box 91027, Austin, TX 78709; (512) 288-7540.

**Circle 381 on reader card**

## Multiview Corp. Presents Multiview Fixed Assets

Multiview Corp. introduced Multiview Fixed Assets, a fixed-asset management system for the HP 3000 environment.

The system is designed to help users achieve comprehensive financial, tax and risk management; maintain accurate asset inventories; and manage property effectively. It lets you track assets from acquisition through retirement, streamline asset management, reduce data entry, project depreciation for more accurate forecasting of tax liability, and comply with Federal regulations and rulings. Users can set depreciation methods that automatically switch to the optimum method at the appropriate time.

Single-copy prices range from \$2,500 to \$20,000.

Contact Multiview Corp., 1 Van de Graaff Dr., Burlington, MA 01803; (617) 229-2225.

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## Fransen/King Ltd. Announces Form Scan 1.0

Fransen/King Ltd. introduced Form Scan 1.0, a utility optionally available with Form Fax that scans designated spoolfiles to identify the fax destination of each document within.

With Form Scan, you can route output from an HP 3000 application to a remote destination via fax, without modification to the application code. Form Scan simplifies the Form Fax interface with third-party packages where database modifications are not desired. Release 1.0 provides this capability for ASCII text data streams. Release 2.0 will provide the capability for applications using PCL forms packages. Form Scan costs \$995.

Contact Solution Centers, P.O. Box 2441, Placerville, CA 95667; (916) 622-0530

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## ISI Presents New Module For Xmath Analysis Environment

Integrated Systems Inc. (ISI) announced the Interactive Control Design Module (ICDM) for the Xmath analysis environment. The ICDM takes full advantage of Xmath's programmable graphical user interface.

The ICDM provides you with a graphically oriented approach to control design. You can evaluate controller designs by interacting directly with graphical elements

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such as sliders, pushbuttons or plots. For example, designs can be changed by using a mouse to drag controller poles and zeros or Bode plots. Releasing the mouse then automatically changes the design to be updated, and gives you immediate graphical feedback on the results of your design choices.

Xmath is a mathematical analysis tool designed for X Window workstations that combines interactive color graphics and an object-oriented scripting language in an interface based on the Motif window management standard. Xmath is available for most UNIX workstation platforms including HP-UX.

The Xmath Interactive Control Design Module price starts at \$2,500. Contact Integrated Systems Inc., 3260 Jay St., Santa Clara, CA 95054; (408) 980-1500.

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### DataExchange Enables HP95LX To Macintosh Data Transfer

Sparcom announced DataExchange, the connectivity software that makes file transfers between the HP 95LX and the Macintosh possible.

DataExchange is designed to be HP 95LX system manager compliant. The DataExchange program can be accessed without exiting or halting other programs or built-in applications of the HP 95LX. DataExchange transfers ASCII and binary files between the HP 95LX and Macintosh. It will translate personal information manager data between the HP 95LX and several popular Macintosh programs such as PowerUp's AddressBook Plus or Claris' Hypercard. DataExchange supports Macintosh System 6 and 7 and is compatible with Com-munications Toolbox. DataExchange uses an intuitive menu interface on the Macintosh that allows file selection and gives file status during data transfer.

DataExchange lists for \$89.95. Contact Sparcom Corp., 897 NW Grant Ave., Corvallis, OR 97330; (503) 757-8416.

**Circle 376 on reader card**

### EDI WINDOWS 4.0 Increases Productivity

M.B. Foster Associates Ltd. announced EDI WINDOWS Version 4.0 an EDI translation product for HP 3000 (MPE/iX) HP/9000 (UX) and DEC VAX (VMS) systems. It's designed to increase end-user productivity and improve response time, and it permits

maximum control of EDI processes by streamlining administrative functions.

Features of EDI WINDOWS 4.0 include: an intuitive user interface and table driven tools, which guide you through set-up and maintenance of EDI trading partners; a Document Management Module with user-selectable criteria to track EDI messages, audit transactions and acknowledgements and report statistics on EDI activity, EDI WINDOWS 4.0 also provides users with the ability to define conditional mapping instruction and User Exits to promote "one pass" EDI application file processing. EDI WINDOWS processes can be run on a standalone system, distributed among intra-company processors or accessed through a central EDI gateway system serving multiple business units.

EDI WINDOWS can operate in batch, event-driven or schedule driven mode. Contact M.B. Foster Associates Ltd., 50 Water St., Chesterville, Ontario K0C 1H0; (613) 448-2333.

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### Evolution Of BASIC Continues With XRMB

DTACK Systems Inc. released the first phase of its Extended Rocky Mountain Basic binary (XRMB). This binary is an operating system extension that allows LONG integers and EXTENDED arrays.

Using the new BASIC keyword LONG, users now can declare 32-bit integers. These LONG integers can have values in the range -2, 147, 483, 648 to 2, 147, 483, 647 and use only 4 bytes per element. LONG will give a speed and size advantage over HP's REALs, while giving a range advantage over HP's INTEGERS.

The XRMB also allows any array to be declared with EXTENDED index ranges. With XRMB any index now can have a size of 2, 147, 483, 647. This allows arrays to be limited by available memory, not by HP's index size of 32, 767.

The XRMB binary is available for workstation BASIC 6.0, 6.2, 6.21. Contact DTACK Systems, 1240 N. Van Buren, Suite 105, Anaheim CA 92807; (714) 998-224.

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■ **Managing Performance In An Open Systems Environment** — Wayne Morris, product line manager for HP's PerfView performance management tool, examines diverse performance challenges facing managers of heterogeneous enterprise networks.

■ **The Open Systems Operation Manager** — The combined forces of data center automation and distributed information systems are changing what operations managers do — and what they need to know.

■ **Recovering From Distributed Disasters** — The advent of enterprise-wide integration together with geographically-dispersed networked systems has made disaster recovery planning a logistical nightmare. Lynn Haber examines how you can be prepared when disaster strikes a segment — or the backbone — of your corporate LAN.

**SPACE CLOSING: 2/8**

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\*Articles subject to change.

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**Gordon McLachlan**

# Deep Voodoo

I always believed computer problems were puzzles

that could be solved only through the careful application of logic. That was before I got my first PC; now, I know better. It's clear that these problems are caused by gremlins, spooks and other supernatural phenomena that are immune to logic.

I have a friend — he's a medical doctor, so I assume he's almost smart enough to be a computer jockey — who seems to have a real spook infestation in his PC. Any time he does anything to it, something unrelated to what he's done goes wrong.

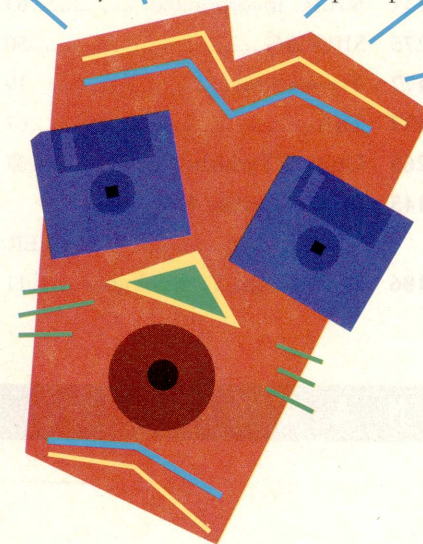
Shortly after he bought his PC, he installed a screen-saver program with password protection. Everything worked fine until the next day when he turned on the machine and nothing appeared on the screen. Being an analytical fellow, he assumed the problem was probably caused by the last thing he did to the system. After calling the software vendor, and spending a couple of hours with it, he figured out that the monitor had blown. It was just a coincidence. Or was it?

Then, he bought a fancy golf game with gee-whiz graphics and a driver that drove Windows crazy. After he spent a few quarters on calls to the vendor, he finally got the graphics under control, only to find that his mouse no longer worked. Again, he assumed the malfunction had something to do with the software he had just installed. He backed out all of his changes. Still no mouse. When he called me, I suggested he take the mouse back to the store to see if it was working properly. Sure enough, the

mouse was screwed up. Another coincidence? Maybe.

## Spells And Incantations

A couple of days ago, my friend called me again, after having installed a new video adapter, a sound card and another fancy game program. The video and sound cards worked fine with the game, but after running the game once, he couldn't run Windows anymore. The Windows logo came up, but he was immediately returned to the C:> prompt.



When I heard this, I immediately thought he had some sort of a high-memory conflict. Having faced an almost identical problem once myself, it looked like a no-brainer. After a little delicate surgery on his SYSTEM.INI, CONFIG.SYS and AUTOEXEC.BAT files, I was sure that we could take care of this little problem. No such luck.

I suspected something flaky was going on, I had him check out his hard disk. Sure enough, there were a few lost clusters on the disk. But it didn't look too bad, so I told him to take two aspirin, re-install Windows and call me in the morning. I had no logical basis for mak-

ing him do this, but it gave him something to do. And re-installing Windows is like a magical incantation. I've used it to chase away many a spook. Don't ask me why it works, it just does.

After a couple aborted attempts, my medical friend called me back. When he had tried to reload Windows, he consistently got disk I/O errors. So I sent the doc out to buy a disk utility package, and had him check out the drive.

Sure enough, bad sectors cropped up like zits on prom night. Another coincidence? I think not. I thought, the next time this guy calls me with a problem, I'm going to suggest he take the machine to a priest for an exorcism. My learned opinion is that software and hardware changes have agitated the evil spirits in his box, and they will cause mischief until they've adjusted to the new configuration. These problems won't go away until he gets to the root of the problem and chases them all out.

Lately, my newest PC has been causing some weird problems, too. I occasionally deal with a PR firm whose fax machine doesn't get along with my PC (or is it my fax?). The company can apparently send a fax to anybody but me, and I can receive one from any machine but the company's. It's clear that our gremlins just don't get along, so we just gave up and decided to use Federal Express. There was no point even messing around with a "logical" solution. I'm sure there isn't any.

This made me think. Maybe one of these computer super-stores that are cropping up around town ought to add a freezer section where you can pick up a batch of goat and chicken entrails to use for divining problems. It makes as much sense as a lot of other things I've tried. ■





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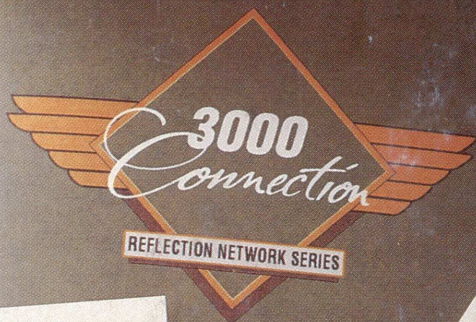
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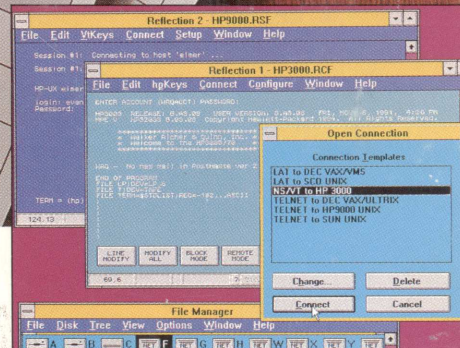
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